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THE UNIVERSITY OF ALBERTA

Suitability and Implications of Using Timber-RAM to Determine Base and Intensive Allowable Annual Cuts for Forest Management Agreement Holders in Alberta

by

Alan Pollock

(C)

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Suitability and Implications of Using Timber-RAM to Determine Base and Intensive Allowable Annual Cuts for Forest Management Agreement Holders in Alberta submitted by Alan Pollock in partial fulfilment of the requirements for the degree of Master of Science.

Supervisor

Barrie L. Phillips

Date April 22, 1983

Dedication

Dedicated to my wife, Susan, who married me in the middle of it all . . .

. . . and did most of the typing . . .

Abstract

Timber RAM, a computerized linear programming model, was used to determine the base allowable annual cut (AAC) and some intensive AAC's for one specific Forest Management agreement area in Alberta. Data from 1500 temporary sample plots, located on the lease area of Canadian Forest Products Ltd. in Grande Prairie, was used as the basis from which the yield tables were derived. Results of relevant silvicultural research were documented and transformed into formats suitable for use in Timber RAM, and the effects on the present AAC were quantified.

The mixedwood stand conversion program had the greatest effect on present allowable annual cut (12.37%), and was the most efficient in terms of allowable cut increase per acre treated. AAC increases resulting from other silvicultural programs are as follows: Density control on 5000 acres - 0.22%; Fertilization - 0.59%; Genetic improvement - 0.02%; and Regeneration control - 6.97%. The fertilization program was deemed economically infeasible for this particular study.

The allowable annual cut was estimated for a combined intensive management program, consisting of mixedwood stand conversion, density control on 5000 acres, genetic improvement, and regeneration control. The increase accruing from such a program was estimated to be 14.14%.

It is recommended that a system of permanent sample plots be established on the forest management agreement area in order to: (1) Improve the quality of growth information on current stands; (2) Measure the growth on regenerated stands; and (3) Monitor the effects of mixedwood stand succession.

It was concluded that Timber RAM can and should be used as an aid in determining base allowable annual cuts and intensive allowable annual cuts for forest management agreement holders in Alberta.

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My sincere gratitude is expressed at this time to Canadian Forest Products Ltd. in Grande Prairie, for their committment, both financially and corporately, to the project, as well as for their complete co-operation in the sharing of any and all data relevant to the project. Their involvement was integral, and greatly appreciated.

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I am very grateful to my former employer, Tahsis Co. Ltd. in British Columbia, who supplied much needed moral and financial support to myself after my departure from that company.

The dedication reflects my gratitude to my wife, Susan, who graciously keypunched the manuscripts, and put up with having her husband spend every spare moment on the thesis, for the first two years of our marriage.

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1. Introduction

The Timber Resource Allocation Method (Timber RAM, Navon, 1971) is a linear programming model designed to aid in the development of long range forest management plans. It is fully computerized and is able to give harvesting schedules and reports for planning horizons of up to three hundred and fifty years. Linear programming is currently one of the most popular programming techniques used in North America for long range harvest scheduling (Chappelle *et al*., 1976).

Use of Timber RAM has been developed, modified, and tested for use in Alberta by Beck and Phillips (1980). They have recommended to the Alberta Forest Service (AFS) that the 1971 version of Timber RAM be accepted as the current planning model for use in estimating long term allowable annual cuts (AAC's) in the forest management units in Alberta.

This study will try to determine if the model is suitable for use in estimating the long term AAC in forest management agreements (FMA's) in Alberta, for non-intensive and intensive forest management. This will be attempted by studying one specific FMA. The effects of intensive management on the stand volume production and the AAC will be documented.

The main purpose of this thesis project is the development of techniques. It is not the purpose of this project to develop generalized effects on AAC due to intensive forest management practices. However, a forest with generally the same yields, species, and age class structures as the case study, should show generally the same effects.

1.1 The Problems

A Can Timber RAM be used in Alberta as a mechanism through which agreement may be reached between the AFS and an FMA holder regarding an AAC based on non-intensive forest management? This question has not been answered thus far, and will involve considerable attention to the following factors:

1. A concensus is required between at least the two major parties, the FMA holder and the AFS.

2. The AFS has policies regarding the forest, such as the alternate clear-cutting requirement, and a "10-year" maximum regeneration lag.
3. The FMA holder usually has goals, which may include maximization of profit and staying in business.
4. There is a shortage of data for construction of yield tables and growth curves for both current and regenerated stands, which are required for Timber RAM.

B. Can Timber RAM be used in Alberta as a mechanism through which agreement may be reached between the AFS and an FMA holder regarding an AAC based on intensive forest management? If an agreement is reached (with the help of Timber RAM) on a non-intensive or base AAC, can the effects of intensive management be incorporated into the Timber RAM model so that they will be accurately depicted in the predicted AAC? The intensive forest management practices to be considered in this study are:

1. Fertilization
2. Genetic improvement
3. Mixedwood stand conversion
4. Regeneration control
   a. Regeneration lag
   b. Harvest cycle reduction
5. Density control

For each practice mentioned above, the answer may be that:

1. There is adequate relevant data and it can be incorporated into Timber RAM.
2. There is inadequate relevant data, although it would be possible to incorporated it into Timber RAM once collected.
3. There is adequate relevant data, but it cannot be incorporated into Timber RAM.
4. There is inadequate relevant data, and even if adequately available Timber RAM could not use the data.

C. What are the effects of fertilization, genetic improvement, mixedwood stand conversion, regeneration control, density control, or any combination thereof, on the present AAC of an FMA in Alberta?

1.2 Objectives

1. To determine if the 1971 version of Timber RAM can be used as an aid to reaching agreement between the AFS and a FMA holder in Alberta regarding a base AAC.
2. To determine if Timber RAM can adequately quantify the effects of intensive management on the present AAC of an Alberta FMA.
3. To document the quantitative effects of intensive management on AAC on a specific Alberta FMA.

2. General Methodology

2.1 Background

The completed literature review will:

1. Document the research work completed to date, applicable to or in Alberta forests, on the various intensive management practices mentioned above.
2. Document the study of other computer programs and techniques available to handle forest management problems, on both a stand and a forest level.

2.2 Data

Canadian Forest Products Ltd. (CANFOR) is currently an FMA holder located in Grande Prairie, Alberta. The company is planning on building a new sawmill which should have the capacity to fully utilize an intensive AAC. Data from 1500 temporary sample plots on the company's lease area and reserve area (W-1) were collected and used as the basis for the yield tables required for Timber RAM. AFS type maps were used to obtain areas and ages of various stand types.

2.3 Determination of the AAC

According to Beck and Phillips (1980), the general process required for long run AAC determination involves four major steps:

1. Determine the net land base, geographically, and then segregate stands on basis of merchantability and management requirements.
2. Determine the current and future expected volumes on these stands.
3. Reduce the number of stands by aggregation or clustering.
4. Determine the AAC.

In CANFOR's case, the geographical area is defined in the FMA. Presently, pure hardwood stands are not being utilized, and the softwood component is being converted into sawlogs. The merchantability standards are now 680 ft^3 / acre, based on present volume or volume at rotation age.

The stands were aggregated on the basis of species composition to produce seven major volume classes:

1. Pure white spruce (*Picea glauca* (Moench) Voss) stands
2. Pure lodgepole pine (*Pinus contorta* Dougl. var *latifolia* Englem.) stands
3. White spruce – lodgepole pine mix stands
4. Black spruce (*Picea marianna* (Mill.) B.S.P.) – lodgepole pine mix stands
5. Balsam fir (*Abies balsamea* (L.) Mill.) conifer mix stands
6. Coniferous – Deciduous (or "Softwood – Hardwood") stands
7. Decidous – Coniferous (or "Hardwood – Softwood") stands

The classes were sub-divided into seven different classes on the basis of age, to produce a possible 49 timber classes. Since there were no significant amounts of 10 year old Balsam fir – conifer mix stands, only six age groups were assigned to this class, so that the total number of timber classes in CANFOR's lease area for the purpose of this study was 48.

Volume – age relationships for each of the seven major volume classes by analysis of temporary ("TPLOT") plot data. The details of the analyses are provided under Part 4.2: "Forest Statistics".

This study is dealing with the development of Timber RAM to determine the AAC for an FMA holder. Therefore, the necessary preparations for determining an AAC using Timber RAM will be discussed. The "base" AAC, – i.e. the AAC based on predicted yields from forest management currently required by law and AFS policy – will be calculated. Alternative AAC's will be determined for several "intensive" forest management options – i.e. forest management practised above and beyond those currently required by law and agreement.

Timber RAM's function is to take data provided by a forest manager, transform the data into a matrix suitable for a linear programming computer package for optimization, and then transform the solution provided by the computer into a more readable report.

The data required to operate Timber RAM falls into three main catagories:

1. The policy parameters
2. The forest statistics
3. The management alternatives

A brief description of each group is provided here.

2.3.1 Policy Parameters

This group of data includes the basic management policies and constraints. In this group, the user specifies the length of the planning period, the length of the planning horizon (or the total time length spanned by the problem), the length of the conversion period, the variable to be optimized and the length of the optimization period, the conversion link (between the conversion period and the post conversion period), and the flow policy constraints. [1]

2.3.2 Forest Statistics

The basic forest data to be included in this group are yield tables, to which each timber class is assigned. The 1971 version of Timber RAM, allows insertion of up to 30 yield tables for programming.

Each yield table is assigned to a "volume class" by Timber RAM. For each volume class, the user must also specify the desired rotation age and the harvest volumes available up to rotation age for regenerated stands.

In this study, assumptions regarding cull and regeneration lag are incorporated into the current and regenerated volumes.

As mentioned earlier, the forest in CANFOR's lease was aggregated on the basis of species composition and age. For each timber class, the user must specify age; area; the volume class to which it is assigned; and the degree of road accessibility for the first five periods.

---

[1]See Appendix 10 for term definitions.

2.3.3 The Management Alternatives

The management alternatives apply directly to each timber class. It is possible to specify , for each timber class, the volume class relevant to the alternative, the types of management (clearcut only or harvest cuts with preceding partial cuts), the youngest age at which the timber can be cut, the oldest age at which the timber can be cut, the minimum number of cuts (partial and harvest), and the maximum number of cuts. If genetically improved stock is to be used, the period of time when the stock is available would be specified here. More than one set of management alternatives may be specified for each timber class.

3. Literature Review:

Stand Yield Responses to Intensive Management in Alberta

and

Computer Aids for Assimilating Intensive Management

Into Allowable Cut and Harvest Scheduling

3.1 Introduction

The first part of this review outlines the present state of knowledge regarding the effects of intensive management on the allowable annual cut, applicable to an Alberta forest. Where there is enough information, the headings are broken down into species.

The second part deals with alternative ways of translating this knowledge into allowable cut, using computer technology.

3.2 Intensive Management

3.2.1 Fertilization

3.2.1.1 White spruce

Weetman *et al.* (1976, 1978, and 1979) reported the results of an inter-provincial fertilization program carried out by the Canadian Forestry Service. In this program, there has been only one experiment carried out for white spruce in Alberta.

Assuming that nitrogen would be the limiting factor in all the forests, but noting any interactions between nitrogen, phosphorous, and potassium, it was found that white spruce in Alberta either failed to respond to treatment, or yielded results that were inconclusive, when subjected to Scheffe's test at the 10% level of probability. Responses in increment ranged from 0 to 31%, with the greatest response occurring with the application of 200 lb. of N per acre.

Another experiment involving fertilizer and glyphosate was carried out by Blackmore and Corns (1979), near Edson, Alberta. The experiment showed that white spruce seedlings will respond significantly to fertilizer, but not necessarily to release from competing vegetation. Since the experiment involved seedlings, and lasted only two years,

it is hard to draw any conclusions regarding increased volume production.

3.2.1.2 Lodgepole pine

Lodgepole pine was also treated in the experiment carried out by Blackmore and Corns (1979). The 26 month results showed that the pine seedlings responded significantly to fertilizer and even more to fertilizer and release with glyphosate.

Cochrane (1975) reported that annual volume growth for fertilized lodgepole pine had outpaced the controls by 70%, at the end of a four year period. The trees were described as being "pole-sized", of about 45 years of age. The treatment consisted of 600 lb. / acre N, 300 lb. / acre P, and 90 lb. / acre S.

Bella (1978) treated 72 year old thinned lodgepole pine in Alberta with N, P, and S. Using covariance and response surface analysis at the 5% significance level, he concluded that 6.8 m^3 / ha. of total growth (or 27%) over 7 years was attributable to fertilization.

3.2.1.3 Black spruce

Weetman (1975) worked on a 65 year old upland black spruce stand in Quebec. The treatments included thinning at two levels (25% and 50%) and fertilization with N at two levels (100 lb. and 400 lb. / acre). Fertilization increased total volume growth in this stand 33% to 74%, depending on the dosage. The effects of thinning from this experiment will be dealt with below.

In Manitoba, black spruce responded best to full N, P, and K treatments, giving an extra 66 ft^3 / acre total volume over a five year period. No significant response was found for similar treatments to black spruce in Ontario (Weetman *et al.*, 1976, 1978, and 1979)

3.2.1.4 General

Morrison *et al.*, (1977) studied the effects of calcium and magnesium, with and without NPK fertilizer, on the growth of Jack pine (*Pinus banksianna* Lamb.). Using F ratios, he showed a significant response for all NPK treatments. Using Duncan's new Multiple Range Test, three treatments were found to produce significant increases in periodic annual increment:

NPK Mg 56 – giving a 2.32 m^3 / ha. / yr. increase over control;

NPK Ca 224 – giving a 2.84 m^3 / ha. / yr. increase over control; and

NPK Ca 448 Mg 28 – giving a 2.14 m^3 / ha. / yr. increase over control (all total volumes).

From these results, it is difficult to determine any sort of percentage increase because the original volumes are not given.

In Manitoba, Jack pine increased 155 ft^3 / acre or 63% above control increments, over 5 years in the C.F.S. Interprovincial Forest Fertilization Trials (Weetman *et al.*, 1976). Weetman *et al.* (1976, 1978, and 1979) provide the following 5–year responses (and the year of measurement):

a. White spruce (Nova Scotia and New Brunswick)

–52 ft^3 / acre or 15% with N & P (1974)

b. Balsam fir (Nova Scotia and Quebec)

– 120 ft^3 / acre or 27% with N & K (1974)

c. Balsam fir (Quebec)

– 168 ft^3 / acre or 49% with N & K (1976)

d. Jack pine (Ontario and Quebec)

– 154 ft^3 / acre or 51% with N & K (1974)

– 182 ft^3 / acre or 47% with N & K (1975)

e. Jack pine (Quebec)

– 125 ft^3 / acre or 39% with N & P (1976)

f. Jack pine (Ontario)

– 167 ft^3 / acre or 50% with N, P, & K (1976)

g. Red spruce (*Picea rubens* Sarg.)

– 160 ft^3 / acre or 40% with N (1974)

3.2.2 Genetic Improvement

The Alberta Forest Service, in conjunction with Canadian Forest Products Ltd., Procter and Gamble Cellulose Ltd., St. Regis (Alberta) Ltd., and Blue Ridge Lumber (1981) Ltd., has embarked upon a provincial tree improvement program. The program was started in 1977 (Dhir *et al.*, 1979) and concentrates on the improvement of lodgepole pine and white spruce. It is important to note that in Alberta the gene pool is still intact.

3.2.2.1 Lodgepole Pine

In Alberta, 971 lodgepole pine selections have been made to provide seed for half – sib progeny tests and seedling seed orchards. The selection intensity for lodgepole pine is 1:500. In region B, south of Grande Prairie and west of Whitecourt, the selected trees average 17% superior height and 13% superior diameters. By the mid 1990's, it is expected that there will be enough seed from the orchards for substantial regeneration use, and the expected improvement accruing from the program is 20 to 30% for this species (Holmes, 1979).

3.2.2.2 White spruce

For the Alberta program, 49 white spruce selections have been made to develop a clonal seed orchard (Dhir *et al.*, 1979). In addition, 83 open pollinated seedlot selections were made to help develop a half – sib seedling seed orchard, at the time of the report. Operational quantities of seed are expected by the mid 1990's and improved production is estimated at 15 to 25% (Holmes, 1979).

Teich and Khalil (1973) report that the estimated gains in a white spruce progeny test were 26% at age 11, and 17% at age 22, with a 25% gain in diameter, and shows that by selecting the tallest progenies after 11 growing seasons, volume can be increased by 81%. This would support the hypothesis that the percentage increase in volume substantially exceeds the percentage increase in height growth.

Carlisle and Teich (1971) in presenting a cost – benefit analysis for tree improvement, give the results of a 29 year old provenance test on white spruce as follows:

Beechburg area, Ontario	32% greater height growth
New Brunswick	25% greater height growth

Wisconsin	22% greater height growth and 16% over local Sw.

They conclude that gains of at least 20% can be expected in volume production through plus tree selection and progeny tests and use 15% in their cost – benefit analysis. These results are re-iterated in Carlisle and Tiech (1975).

3.2.2.3 General

Kellison and Dinus (1977) in their report on loblolly pine (*Pinus taeda* L.) and slash pine (*P. elliotii* Engelm.) plantations, include estimated volume gains based on progeny test results. For loblolly pine, the estimated first generation gain is 17%, and for slash pine, the estimated gain is 20%. Since the breeding program is based on a clonal seed orchard, operational quantities will be available 10 to 15 years after grafting; probably by 1990.

Jack pine is also undergoing improvement on the prairie provinces (Klein, 1979). In Eastern Manitoba, it was found that 26 progenies had mean heights which were at least 10% above the test mean. Another 23 parent clones selected for the production clonal seed orchard have progenies at least 6% taller than tested means, with a mean progeny height 8.5% higher than the test means. In Saskatchewan, clones selected for the seed orchard at Prince Albert have mean progeny heights of 8.3% above the test mean.

3.2.3 Mixedwood Stand Conversion

In Alberta, a major stand treatment would be reduction of the *Populus spp.* component in the forest, with the aim of reducing competition for the coniferous component. Whether or not the *Populus spp.* is utilized is not important at this time; the allowable cut refers only to coniferous species.

The first research to be carried out in this area was handled by Lees (1966). He noted that conifer release from aspen (*Populus tremuloides* Michx.) competition also reduced the amount of mechanical damage inflicted upon the spruce crowns.

Trees having only aspen competition were released for a minimum radius of eight feet. Aspen suckering was prevented by treating the stumps with ammate crystals, which proved to be a very successful method of prevention.

The effect of release were most pronounced in the 20 to 40 year age class. Lees calculated that the mean volume of released stems were 20 to 40% higher than those of the control stems.

He recommends that:

1) Individual trees be treated rather than whole stands.

2) No treatment be given to trees over 70 years old.

Stenecker (1967) reports the results of a series of experimental release cutting in 15 to 60 year old mixedwood stands in Manitoba and Saskatchewan. The ten year results showed that the diameters of the released trees grew between 20 and 40% faster than trees on control plots, with the response occuring immediately after release. Net volume increment was up to 50% lower on control plots, and merchantable volume (cordwood) averaged 60% higher in the released plots.

However, results from another study (Stenecker, 1974) reinforces Lees' recommendation that it is not worthwhile to release spruce over 70 years of age. Release cutting in a mixedwood stand 75 to 100 years showed no significant increase in total cubic foot or board – foot volume production. Stenecker concludes that white spruce in the 70 to 80 year range is too old to respond to release.

For guideline purposes, Johnstone (1977) has published yield tables for fully stocked spruce – poplar stands in Alberta, for a range of sites.

3.2.4 Regeneration Control

3.2.4.1 Regeneration Lag

Allowable annual cut will be influenced, to a certain extent, by the regeneration lag. Presently, the Alberta government requires that any cutover areas must be adequately restocked by the tenth year following harvest; and that a regeneration survey be completed by the seventh year (Reed and Ass., 1978). Therefore, any practices that can be proven to reduce this lag must result in a higher allowable cut.

3.2.4.2 Species Selection

A factor that may come into play when determining allowable cut increases from intensive management is juvenile height growth. The Alberta Forest Service requires that regeneration must be either 20 years old or average two meters in height before reserve strips may be harvested. Johnstone (1976a) found, from height–age regressions, that lodgepole pine regeneration generally exceeds the two – meter minimum, and white spruce generally does not reach it within 20 years.

3.2.5 Density Control

This section reports the density – control results given by various scientists on lodgepole pine, white spruce, black spruce, and Jack pine. No attempt is made here to translate their figures into numbers suitable for revision of yield tables or rotation ages.

3.2.5.1 Lodgepole Pine

Bella (1972) has done some work in Alberta on a young lodgepole pine "doghair" stand, located south of Teepee Pole Creek in the Bow – Crow Forest. The original density of the stand was 100,000 stems per acre,and the trees were 25 years old.

The stand was strip thinned with the aid of a drum chopper being pulled by a D7 cat. The swaths were 10.5 ft., and the residual strips were from four to six feet wide.

The results were as follows:

In open stands:	– very little response
In dense stands:	– relative increase in dbh in the 0.5 inch class of 100%; in the 2 inch class of 54%
	– relative increase in stump cross–section in the 0.5 inch class of 806%; in the 2 inch class of 86%
	– "good" height response (no figures given).

In a later paper presented on the same experiment, Bella (1980) reported the 15 year results, which were as follows:

1. No significant differences in diameter increment response among three arbitrary, newly classified, density groups. The response averaged 45% in the last five year period. Also, the largest diameter differences between thinned and unthinned stands occurred in the lowest density levels.
2. There was a height response in the last five year period, averaging 10 cm. / annum over controls.
3. The effects of release were not restricted to the edges of the strips.

Bella, however, did not give any figures on total volume production, but implied that there was a loss of volume on the treated areas, which may or may not be made up for in future years.

Johnstone (1981b) conducted a detailed study of the effects of thinning an overstocked lodgepole pine stand near Hinton, Alberta. The 22-year old stand was thinned in 1954, and remeasured in 1979. Effects of thinning on diameter growth, height growth, total volume growth, and merchantable growth were observed for three different groups of trees – individual trees, 500 "crop" trees per hectare, and the whole stand. The total and merchantable volume results are presented here for the whole stand and for the crop trees.

In 1954, immediately after thinning, the control plots had significantly more total volume per stand than any of the thinned plots. In 1979, however, remeasurements showed no significant differences in total volume per stand between the controls and the thinned plots. Total volume per tree in stands thinned to at least 1.8 by 1.8 m. spacing was shown to be significantly greater than total volume per tree in control stands.

Merchantability standards used in Johnstone's (1981b) study were based on a 10 cm. (4 inch) top and a 30 cm. (12 inch) stump. Merchantable stand volume using these standards, was shown to be 435% higher at the end of 25 years, for blocks thinned to 1.8 by 1.8 m. spacing in 1954 and rethinned 15 years later. The 1979 volume for this treatment ("Treatment 3") was 95.75 m^3 / ha. or 13.69 cunits / acre *vs.* 17.91 m^3 / ha. or 2.55 cunits / acre for the control plots. "Treatment 4" – plots thinned to 2.4 by 2.4 m. spacing in 1954 only – increased in merchantable stand volume 334% more than the controls, showing 77.69 m^3 / ha. or 11.10 cunits / acre at the end of the test period.

When results were analysed for the 500 "crop" trees per hectare, it was shown that total volumes were significantly higher in plots thinned to at least 1.8 m. by 1.8 m. (82.85 m^3 / ha. or 11.84 cunits / acre for Treatment 3, and 79.49 m^3 / ha. or 11.36 cunits / acre for 3.7 by 3.7 m. spacing *vs.* 37.86 m^3 / ha. or 5.41 cunits / acre for controls). Merchantable volume differences for the same trees were even more pronounced after 25 years:

1.8 by 1.8 m. spacing (rethinned)	– 64.93 m^3 / ha. or 9.28 cunits / acre
3.7 m. by 3.7 m. spacing	– 62.98 m^3 / ha. or 9.00 cunits / acre
Control	– 13.85 m^3 / ha. or 1.98 cunits / acre

Johnstone (1981a) reported the 13 year results of juvenile spacing 7 year old lodgepole pine. Plots were established on three different sites (low, medium, and high), and

within each site, five different levels of stocking were obtained. Analyses were carried out on three components of the stand: all the trees; the largest 25%; and the largest 494 trees per hectare. The reported effects on height, diameter, and volume are presented here.

Significant mean height increases due to spacing were recorded on plots in the low and intermediate sites only. These increases ranged from 35% to 39%. Periodic height growth was enhanced by spacing in the largest 494 trees per hectare, but no figures are available.

Mean stand diameter was significantly improved in all sites by wider spacing, for all trees and the largest 25% of the trees. The degree of improvement in dbh ranged from 2.0 cm. (75%) in the low site to 4.3 cm. (106%) in the intermediate site, with an improvement of 3.3 cm. (64%) showing in the high site.

Volume and volume growth per hectare were significantly lower at wider spacings at the end of the report period, for all the trees and the largest 25% of the trees. "Treatment 2" – spacing to 988 trees per hectare – showed a 4 m^3 / ha. (57%) increase in the largest 494 trees per hectare component on the high site.

From the results of this study, Johnstone (1981a) recommends that young stands with a density of less than 7907 stems / ha. (or 3200 stems / acre) be given a low priority for treatment, and that a density target of 2000 – 2500 stems / ha. (800 – 100 stems / acre) is reasonable. For poorer sites, he recommends wider spacing, and no spacing is recommended in areas with root rot or gall rust infections.

In contrast, Walker and Johnson (1975) treated mature (84 year) lodgepole pine in a stand near Strachan, Alberta to find that no treatments resulted in any increases in the gross volume of pine. Windfall damage and sunscald nullified any meaningful growth gains attributed to treatments, and clearcutting was the only treatment recommended.

3.2.5.2 White Spruce

In a three density study on white spruce, Stiell (1980) found that 33 year old spruce tree diameters responded the most (21.6 cm. *vs.* 16.8 cm. for control) to the heaviest thinning. The height response was similar, but not as distinct.

In the same report, he also tackled the issue of total volume. The control plots all had more standing merchantable volume at the end of 20 years than any of the thinned plots. However, total production – growth plus thinning and mortality – was greater for all

the thinned plots. Mortality in the control plots was 11.4% total volume, while the thinned plots showed 0.8 to 1.5% total volume mortality. It is concluded that an economical commercial thin will increase the overall cut because of the recovered mortality.

3.2.5.3 Black Spruce

Weetman (1975) reported the ten year growth response of 65 year old upland black spruce in Quebec to thinning and fertilizer treatments. Two thinning intensities (a 25% removal and a 50% removal), were studied. The thinning results are expressed in terms of gross increment percent, and are as follows:

control – 16.1%

25% thin – 16.7%

50% thin – 38.2%

The increments are based on a single local volume table, using only diameter at breast height in the function.

Stenecker (1969) found that the thinning of overstocked black spruce increased the average dbh from 0.5 to 1.8 inches. It was based on the 20 year results of a 58 year old stand.

3.2.5.4 Jack Pine

There has been a large amount of work done on density control of Jack pine. It is reported here for comparison's sake.

Chrosciewicz (1971) measured the growth response of two stands of Jack pine that were initiated ten years earlier. One stand of medium density was started by spreading cone bearing branches of Jack pine at four foot spacing. The other stand, of high density Jack pine, was started by intense broadcast seeding.

The results showed that the medium density pine, which averaged 4800 stems per acre, had an average dbh of 1.23 inches, 42.3% greater than the high density pine. The average height of the medium density pine was 20.6% greater (11.06 in. *vs.*8.78 in.) than the high density pine, which had reached 338,700 trees per acre.

It is important to note that the medium density stand consisted mainly of dominant and co-dominant trees.

Bella and De Francheschi (1971) reported the five year results of mechanical strip thinning in young Jack pine on four different sites. The results showed diameter increment increases over control plots of 31% (dry type) to 66% (oligotrophic "free" type) in years two to five after treatment. (The first two growing seasons showed no difference.) There was no relationship between increment and distance to swath, indicating that the growth response is not limited to border trees (similar to lodgepole pine).

In 1974, ten year results were reported on a different project in the same area (Bella, 1974). In this project, two-way thinning was tried on an experimental basis, and results were recorded for two sites: fresh and moist.

The 800 largest trees on the fresh sites showed a 40% increase in dbh increment over control for one-way thinning and a 30% increase from two-way thinning. In addition, on fresh sites, the edge or border trees increased in diameter 40 to 50% more than trees in the center of the block for two-way thinning. One-way thinning did not show the same results with significance. Mean diameters with all trees considered (not just the largest 800 "crop" trees) was unaffected by treatment.

In moist sites, no improvements occured.

Mortality remained the same for both thinned and unthinned plots.

More encouraging results were given by Bella and De Franceschi (1974a) concerning commercial thinning of older Jack pine in southeastern Manitoba. Two treatments were applied: crown and low thinning, at heavy and light intensities.

Fifteen year results indicated that the biggest absolute improvement accrued from heavy low thinning among trees of intermediate size, (70%). All other treatments improved the diameter in all size classes 30 to 40%, with the least response coming from the light low thin treatment.

The average volume per tree was 25% greater for the total stand, and 50% greater for sawlogs.

A conclusion drawn by the report is: "The preliminary results suggest that the total merchantable volume yield will be greater in the thinned stands, especially for sawlogs." A similar conclusion was drawn by Stiell (1980) regarding commercial thinning of white spruce.

3.2.5.5 General

Stiell (1978) compared "clump thinning" to "uniform thinning" and found that the trees which were thinned to a clump of four had:

a) smaller live crowns,

b) lower dbh growth, and

c) lower BA / ha.,

than the trees which were thinned to uniform spacing. There was no difference reported in volume.

3.3 Computer Aids for Assimilating Intensive Management Into Allowable Cut and Harvest Scheduling

The Alberta forest industry is essentially concerned with even-aged management.[2] Hann and Brodie (1980) have summarized quite well, the alternatives available for answering the important problems facing the even-aged forest manager. The following section will look at some of these alternatives in more detail, and describe other computer programs which might be useful to these particular problems. However, since the AFS is presently using Timber RAM to aid in the determination of AAC's in forests under their jurisdiction, it will be used in this study.

3.3.1 Stand Based Techniques

3.3.1.1 Prognosis for Stand Development

This program, developed by Stage (1973), is a computer projection model which may be useful for implementation of permanent sample plot data. A prognosis, according to the author, is more accurate than a projection, but less detailed than a simulation. This model combines silvicultural knowledge with past growth information to make the prognosis, and uses data from both regeneration plots and individual tree analyses. Harvests and thinnings are incorporated, periodic rates of change are updated, and the effects of competition are maintained by keeping the identity of neighboring trees of the sample plot.

The model will produce, for each of a series of growth periods, the following stand projections:

1. Number of stems per acre.
2. Diameter distribution, on a lowest diameter per fracion basis. The fractions are predetermined (10%, 30%, 50%, 70%, and 90%) so that the diameter varies. For example, the report may show that 90% of the trees in the stand are greater than 10 cm. dbh, and 30% of the trees are greater than 25 cm. dbh.
3. Average growth and mortality per year (in cubic volumes) for each period.

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[2] "An even aged stand is one in which the dominant trees originated at about the same time and, following a period of establishment and frequently, protection as under a shelterwood, develop under full light conditions without significant border competions." (Davis, 1966, pp. 155)

4. Species composition.
5. Merchantable yields in terms of:
   - cubic volume / acre
   - bole surface area / acre
   - bole length / acre
6. Sample tree records, showing the growth trends of individual trees.

Some of the information produced by this program may be useful in the preparation of input data for Timber RAM.

3.3.1.2 MANAGD2

The computer program MANAGD2 (Myers, 1973) is an example of pure simulation. It takes the information supplied for a particular stand, and projects the stand through the planning horizon of a maximum 150 years. The user supplies the desired stand manipulations.

The user must therefore specify the planning horizon, the interval between intermediate cuts, density levels after thinning, the minimum stand age, the maximum stand age up to 180 years, allowable annual acreage cut, stumpage costs, and management costs.

The program supplies:

1. Yields per acre before and after thinning in terms of
   - number of trees
   - average diameter at breast height (dbh)
   - average height
   - total volume (cubic feet)
   - merchantable volume by decade and year
   - sawtimber volume
2. Distribution of understory trees by age
3. Forest status at the end of each year, in terms of allowable cut, actual cut, cumulative cut, growing stock volume, and total volume
4. Present worth rates earned
5. Comparison of alternatives.

According to its author, the program MANAGD2 answers the question "What if?", and is particularly useful in helping to set management goals, after the yield tables have been established. The information produced by this program would be useful in the preparation of data for Timber RAM.

3.3.1.3 Dynamic Programming Techniques

Dynamic programming is "a discrete mathematical programming tool that can describe a problem through a network of points." (Hann and Brodie, 1980). It has been developed in forestry to deal with the optimization of, and interdependence between, thinning regimes and rotation ages. In addition, the technique has been used to calibrate tree development models, and solve stand-level prescription problems.

Hool (1966) describes how he used a combination of dynamic programming and the Markov chain to produce a set of optimal "production control" activities and their expected returns or costs. By using the Markov chain, he was able to introduce probability into the optimal solution, and therefore incorporate risks that are associated with managing a renewable natural resource. He uses the word "prescriptions" to imply a re-examination of the situation at each interval.

Examples of production control activities are: harvest cuts, improvement cuts, thinning operations, and pruning.

Lembersky and Johnson (1975) also used dynamic programming and the Markov chain (transitional probabilities) approach to produce a "stand production probability chart", which is a statement supplying expected volumes and their respective discounted costs for each management option that is followed. The model assumes stochastic growth, stochastic mortality, and stochastic response to treatments, and can be applied to each stand of a managed area.

The development of dynamic programming for optimizing rotation age and thinning schedules is adequately described by Hann and Brodie (1980). The latest product developed by Brodie and Kao (1979), simulates and projects the effects of commercial thinning, pre-commercial thinning, fertilization, and tree improvement. It overcomes most of the shortcomings of its predecessors, such as: no diameter growth acceleration from thinning, and the relative inflexibility of the backward recursive method (explained by Hann and Brodie, 1980). The model, called "Three Descriptor Dynamic Programming"

supercedes work done by Chapelle and Nelson (1964), Amidon and Akin (1968), Schreuder (1971), and Brodie *et al*. (1978).

It is the belief of Hann and Brodie (1980) that dynamic programming will prove to be a major analytical tool in the decision-making process.

3.3.2 Forest Based Techniques

3.3.2.1 ARVOL

An example of a computerized area-volume check method is the program ARVOL . The steps involved in the Area - Volume Check method of determining the AAC are:

1. Determine an initial AAC.
2. Determine a rotation period.
3. "Harvest" the forest, at a rate equal to the initial AAC. Growth of the forest and yield per unit area are taken into account.
4. Check to see if the AAC estimate is to high or too low in relation to the rotation age. If the AAC is to high, it cannot be sustained for the length of the rotation period. If the cut is too low, the forest will not be completely cut over at rotation age.
5. Adjust the AAC estimate to achieve the desired rotation.

These iterative steps have been computerized by Chappelle (1966) and Kuhn (1979).[3]

3.3.2.2 SIMAC (Simulated Intensively Managed Allowable Cut)

SIMAC (Sassaman, *et al*., 1972) is a computerized forest simulation model that calculates the allowable cut for even-aged stands. It has the capability of either maximizing an even flow of cut for a specified regime, or a series of cuts for ten decades, followed by even flow. According to its authors, it does provide an alternative to ARVOL, SORAC, and Timber RAM.

The program computes the harvest rate by using present inventory and projected growth, the rates of which are affected and updated by the inclusion of any or all of four intensive management practices:

(a) mortality salvage

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[3]Kuhn, F. 1979. Area Volume Allotment Check Program. Available at the Dept. of For. Sci., University of Alberta.

(b) genetic tree improvement

(c) pre-commercial thinning

(d) commercial thinning

Once the present volumes and the growth calculations are compiled, along with the acreages treated under the four intensive management regimes, final harvests with their acreages are taken from each age class until a user-specified test cut is reached. The initial acreage is adjusted to allow for these harvests and treatments, and the cut is projected to see if it is sustainable. If the answer is 'yes', a higher cut is picked and the program runs again. If the answer is 'no', a lesser cut is picked, and the program is run again. The highest cut possible is picked using this trial and error method, and the results are printed.

SIMAC is a good example of the "binary search" computerized optimization technique, based on the area-volume control method. The program does not handle economic constraints.

3.3.2.3 TEVAP2 (Timber Evaluation and Planning)

TEVAP2 (Myers, 1974) is another example of a pure simulation program. It is designed for possible compatability with MANAGD2 (Myers, 1973), and produces a detailed management plan.

Input data includes:

1. Periodic forest inventory data
2. Job reports in silviculture
3. Area descriptions of catastrophes
4. Inventory records containing conventional details on stand structure.

The program, consisting of a MAIN program, 16 subroutines common to all species, and a variable number of subroutines for each species; compiles and computes present working circle summaries by age class, areas of each type, and four different allowable cuts.

The first cut is calculated on assumptions from subroutine GOAL, i,e, optimum densities from thinning and balanced age classes. The second cut assumes that the existing stand is treated according to the "WORK" index that identifies stands in need of treatment in the near future. The third cut uses Heyer's formula with actual and optimum growing

stock as input, and the fourth cut is based on area regulation.

A distinguishing feature of TEVAP2 is that actual stands are dealt with rather than stand classes (Hann and Brodie, 1980). However, because the planning horizon is equal to the planning period, which is quite often one decade, TEVAP2 is considered to be a short range planning tool, useful for single stand management. TEVAP, which has been superceded by TEVAP2, has been tested over a two-year period in the Black Hills National Forest (Edward, *et al.*, 1973). The forest consisted of two species: Ponderosa pine (*Pinus ponderosa* Laws.) and white spruce, spread over 1.6 million acres. Results showed that usage of this program in developing a management plan for the forest saved time and money ($15,000 U.S.).

3.3.2.4 SORAC (Short Run Allowable Cut)

SORAC is a binary-search algorithm, used to compute the maximum allowable cut subject to area control, area-volume control, or a combination of both (Hann and Brodie, 1980). It differs from ARVOL in that drastic changes in the cut are avoided by the continuous updating system, which updates the AAC every period. Each successive period is treated as though it is the first period in the area-volume check method, and it has been dubbed "sequential area-volume check" by Johnson and Scheurman (1977).

SORAC provides the manager with a more realistic long term forecast than does ARVOL, because it brings into consideration yields accruing from regenerated stands. This algorithm is described by Chapelle and Sassaman (1968).

3.3.2.5 ECHO (Economic Harvest Optimization Model)

This algorithm, described by Walker (1976), assumes that, for a given stand class, treatment plan, and planning period, the price per unit is a function of volume cut and provides a "financial maturity" solution for a downward sloping demand curve (Johnson and Scheurman, 1977). It employs the binary search technique to provide a linkage between relevant Langrangian multipliers . The result is a definition of "the optimal time path to a long run equilibrium forest, starting from a non- equilibrium solution." Langrangian multipliers are introduced in Duerr *et al.* (1979).

The algorithm is a special version of Model II (Form X) (Johnson and Scheurman, 1977, and Hann and Brodie, 1980). An advanced version of it is incorporated into the

computer program TREES (Schmidt and Tedder, 1980) and the algorithm can be approximated using separable linear programming (Hrubes and Navon, 1976).

3.3.2.6 TREES (Timber Resource Economic Estimation System)

TREES is a forest management and harvest scheduling simulation model which, by employing a series of binary search algorithms, will predict future harvest volumes and their effect on the inventory (Schmidt and Tedder, 1980). As it is a package of different harvest scheduling techniques, it is extremely flexible when dealing with harvest priorities, silvicultural intensities and results by tenure, species, or treatment (Hann and Brodie, 1980).

The harvesting algorithms include:

1. Absolute amount (volume control)
2. Percent of inventory (volume control)
3. Area control, for even-aged stands only
4. Simple even flow of volume, patterned after the SIMAC routine
5. Sequential even flow of volume, patterned after the SORAC routine
6. Even flow of a function of volume (user specified)
7. Present net worth, which is an advanced incorporation of the ECHO algorithm
8. Present net benefit, which maximizes the difference between the demand curve and the cost curve.

Schmidt and Tedder (1980) claim that the practical advantages of the simple even flow routine in TREES make it a better choice for use than linear programming. The harvest priorities are selected before the harvest levels are solved, thereby simplifying the procedure, and allowing for the simultaneous consideration of 376,500 age classes. The authors do point out, however, that choosing the harvest priority beforehand does not necessarily result in an optimal solution, and at best, can produce harvest levels as high as those produced by linear programming.

The ECHO algorithm has been improved upon in the package, by using a quadratic interpolation procedure to make age class growth rates continuous. The original algorithm minimized discontinuity by using annual age classes and harvest periods.

3.3.2.7 Linear Programming - General

Linear programming (LP) is the simultaneous solving of a number of linear equations and inequalities to maximize or minimize a certain specified objective.

Loucks (1964) solved two mathematical models with two different objectives using linear programming. Harvest schedules were produced for a hypothetical forest, with the aims of :

1. Maximizing volume
2. Minimizing area cut

Nautiyal and Pearse (1967) have demonstrated how LP can be used to find an optimal rotational length which will maximize present net worth, and to specify an optimal harvest schedule for the conversion period.

Ware and Clutter (1971) described a computerized management system, which employs linear programming to produce a harvest schedule for 54 management regimes, with their respective total present values. The authors demonstrated how the scheduling of harvest operations in linear programming can aid in producing future growing stock volumes, growth rates, harvest yields, cash flows, present worth, and return on investments.

3.3.2.8 Model I and Model II

Johnson and Scheurman (1977) have grouped four harvest maximization techniques and three discounted present value techniques into two general groups of algorithms: Model I and Model II.

The Model I algorithm, which has been implemented by Navon (1971) in Timber RAM, takes the general approach whereby each age class of each timber class present in planning period 1 forms a management unit, whose integrity is maintained throughout the planning horizon. In Model I, regenerated timber classes will be repeatedly harvested, at rotation age, according to the management regime assigned to the unit. The form of the algorithm used in Model I is provided in Appendix 8.

Model II, on the other hand, maintains the integrity of each timber class as a management unit only until it is final harvested. The acres harvested are then defined as a new timber class, whose integrity is maintained until it is again final harvested. The main difference between Model I and Model II therefore, is that in Model II, the second and

subsequent harvests of the timber classes do not necessarily occur at rotation age.

The user of Model II must define, as activities, the possibility of land base being left as standing inventory at the end of the planning horizon. The algorithm used in Model II is provided in Appendix 8.

Johnson and Scheurman (1977) domonstrate how ARVOL can be defined as a version of Model I or Model II. They also show how SIMAC, SORAC, and the model structures of Nautiyal and Pearce (1967) can be defined as versions of Model II. The ECHO algorithm (Walker, 1976) is shown to be a formulation of the quadratic version of Model II.

3.3.2.9 Timber RAM (Resource Allocation Method)

Timber RAM was introduced by Navon (1971). The program utilizes the linear programming techniques to develop long range forest management plans, consisting of cutting schedules, reforestation schedules, stumpage volumes, revenues, and costs. The schedules are calculated for ten year planning periods, to a maximum planning horizon of 35 decades.

Objectives which may be specified for RAM are: to maximize revenues, to maximize volume cut, or to minimize costs. Constraints may be applied to revenues, expenditures, percentage accessibility for a stand, length of the conversion period, minimum and maximum cutting age, harvest level fluctuations, and availability of genetically improved stock. Rotation ages are specified for each volume class.

Navon (1971) points out that linear programming assumes average timber yield, costs, and revenues per acre in a timber class; regardless of the size of the class. This may introduce possible bias into the selection process by disregarding economies of scale. The author shows how this bias may be estimated by producing a "pseudo Timber RAM" run, and comparing differences in outputs.

Applying Timber RAM essentially consists of assigning an treatment plan to a timber class. A treatment plan may consist of a combination of a harvesting and regeneration activities such as:

1. clearcutting and regenerating with normal stock
2. clearcutting and regenerating with improved stock
3. thinning and clearcutting

all of which may be assigned to any combination of planning periods.

The output[4] consists of any combination of:

1. Timber harvest schedules
2. Problem schedules
3. Harvest reports
4. Harvest graphs
5. Economic reports

A major advantage of using Timber RAM is that opportunity costs of certain alternatives may be easily calculated by making more runs with different constraints. Examples are:

1. Volume losses to streambank protection
2. Volume losses due to alternate clearcuts.

Another major advantage is that it necessarily produces an optimal solution for the specified objective, unless the constraints prevent a feasible solution.

3.3.2.10 CARP (Computer Assisted Resource Planning)

CARP is a system of compatible computer programs designed by the University of British Columbia, to generate timber harvest schedules, and to provide enough relevant information on each forest to intelligently evaluate the desirability of various management techniques. Its components consist of the following:

1. ASAP (as soon as possible), which is the data management system, through which a composite map is created for each area. Information includes: vegetation type, productive capabilities, expected regeneration, silvicultural treatments, designated use (timber, recreation, or wildlife), and forest cover.
2. "A compatible system of growth simulators to produce volume-over-age curves. The curves are adjusted for mature and overmature stands, and are used to predict future volumes for immature stands.
3. Data reduction systems which aggregate type islands for input into a linear programming model.
4. Harvest scheduling program, consisting of Timber RAM (Navon, 1971).
5. Report writers, which take Timber RAM's final report, and convert the schedule back

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[4]The descriptions of the graphs and reports provided by Timber RAM are given in Navon (1971).

into the original timber types. Another report writer simulates the impact of alternative harvest schedules on other resource values (Hegyi, 1975).

4. Base Run Documentation

4.1 Introduction

The "base run", or the Timber RAM run based on the management practises presently required by law and those policies and regulations mutually agreed upon by the AFS and CANFOR, will provide a benchmark to which intensive runs may be compared. At the time of writing, the Alberta Forest Service (AFS) has tentatively agreed upon a base run for use in CANFOR's new FMA determination. Documentation of the requirements and conditions tentatively agreed to, as well as a description of the preparation and calculation of the required data for the base run, are presented here.

4.2 Policy Parameters

4.2.1 Conversion Period

The conversion period (CP) is the "sequence of periods – starting with the first period – for which harvest control constraints have been specified by the user" (Navon, 1971). Harvest volume has been specified as the variable to be optimized. The harvest control during the conversion period was set by the AFS to be "even flow" – i.e. no fluctuation in harvest levels from the first decade cut.

In developing an acceptable CP length, the criterion used as a *starting point* by Beck and Phillips (1980) was also used as starting point for this study – i.e. that the overaged and poorly stocked stands are completely harvested within the conversion period.

Another criterion used by the AFS, which obviously conflicts with the first one mentioned above, is that it would not allow the cutting of regenerated timber during the conversion period. The two criteria mentioned here are incompatible because of different rotation ages for different forest classes (Timber RAM automatically harvests the regenerated timber exactly at rotation age for each stand). For example, if stand 'A' was an overmature stand of spruce, with a rotation age of 70, and stand 'B' was an overmature stand of pine, with a rotation age of 90 years, the CP might be set to 90 years to satisfy

the first criterion mentioned above. If stand "A" was harvested in the first decade, it would automatically be reharvested in the eighth decade, which does not satisfy the second criterion mentioned by the AFS (above). The CP length which seemed to minimize the conflict between the two conditions, and which was tentatively agreed to by the AFS, was nine decades. This CP will be used in this study.

4.2.2 Post Conversion Period and Planning Horizon

"The Post Conversion Period (PCP) should be long enough to assure that the AAC can be maintained at levels equal to or greater than the harvests of the conversion period or to the long run sustained yield average." (Beck and Phillips, 1980). It is difficult to predict the effect of the length of the post-conversion period on the AAC. The effect will differ for different forest structures and different constraints. To assure that most stands are cut at least twice during the planning horizon (PH), the minimum length of the planning horizon was set to be twice the age of the longest rotation. The volume class with the longest rotation is the black spruce - lodgepole pine aggregation, with a lagged rotation age of 110 years. Therefore, the model was tested for a planning horizon of 22 decades.

It was found that with a conversion link (discussed below) of 10%, a 24 decade PH produced a PCP average cut which more closely approximated the long run sustained yield average (LRSYA). However, both the 22 decade and the 24 decade planning horizons produced PCP averages which were less than the LRSYA, because of overcutting in the CP, due to the 10% conversion link.

It was tentatively agreed that the 24 decade planning horizon (or the 15 decade PCP) would be used. The constraints placed upon the harvest in the PCP would be plus-or-minus 99%, around the average cut in the PCP as discussed in Section 4.5.

4.2.3 Conversion Link

The conversion link, as it is applied here, specifies the maximum allowable difference between the harvest level in the last planning period of the CP and the average harvest level in the PCP, expressed as a percentage of the PCP average (or PCA). The conversion link was initially set at 10%, subject to the condition that the PCA would not drop below the LRSYA.

However, with the CP set at nine decades and the PH set at 24 decades, the PCA did indeed drop below the LRSYA. This was not acceptable to the AFS.

To remedy the situation, the conversion link was reset to 6%, which reduced the CP cut enough so that the PCP average equaled the LRSYA. The present AAC with the 6% conversion link was calculated by Timber RAM to be 240.239 M cunits per year. With a 10% conversion link, the present AAC was 240.284 M cunits per year – a difference of 0.02%.

4.3 Forest Statistics

4.3.1 Yield Tables

As stated earlier, the basic forest data with which Timber RAM has to work are yield tables, for both current and regenerated timber. These, when combined with rotation ages, form volume classes to which the timber classes are assigned.

In the base run, assumptions regarding cull and regeneration lag are manifested directly into the current and regenerated yield tables. They are outlined here:

1. Cull deductions: Cull was set at 4%, for both current and regenerated stands, based on CANFOR's best estimate at this time. This number will be verified over the next 10 years, and the relevant verification clause will be written into the revised Forest Management Agreement.
2. Regeneration lag: It was agreed that a 10 year regeneration lag would apply to all cutover stands. This means that it is assumed that after a stand has been cut, nothing will happen on the site for a period of 10 years. After this period, trees will germinate and grow[5].

CANFOR and the AFS agreed that the following prodedure would be used to derive the yield tables for each timber class:

1. TPLOT data, gathered from the portions of the management units G05, E08, and

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[5]This agreement does not conform to normal AFS policy, which states that 10 years after harvest, the area must be adequately stocked with 3 year old seedlings. Although this is referred to as a "10 year lag", it is really only a "7 year lag" since there can be a maximum of 7 years from the time of harvest to the time of germination. Although CANFOR requested the inclusion of the 7-year lag in the base run data compilation, the AFS representatives insisted on the 10-year regeneration lag as discussed.

W01 covered in the FMA, would be used as the data base from which the yield tables would be derived.

2. The standing volumes would be calculated from plots in the A, B, C, and D density stands[6].
3. The regenerated volumes would be calculated from plots in the C and D density stands only.
4. Coniferous gross volumes would be selected from each plot for two utilization standards – 8/5 (for an 8 inch stump and a 5 inch top) and 6/4 (for a 6 inch stump and a 4 inch top).
5. Average volumes for each age class within each species grouping would be determined and plotted. (An aggregation procedure in the SPSS statistical package was suitable for the determination of these age class means.)
6. The shape of each curve would be derived, based on subjective, professional judgement. Stepwise multiple linear regression analysis would then be used to derive the best fit of a suitable function through the data. The function would be chosen on the basis of highest adjusted r^2, or r^2(adj.), and compatability with the age class means.
7. The variables used in the regression analyses would be:

   AVAGE = average coniferous age for the plot.

   X2 = lagged age = AVAGE – age of measurability (lag = 40 years).

   X3 = natural log of X2.

   X4 = natural log of the inverse of AVAGE.
8. The regeneration lag and deductions for cull would be incorporated after the analyses to produce the yield tables.
9. The type of yield tables produced would be empirical yield tables, and no site differentiation would take place.

The yield tables used in the base run would be those derived from 6/4 utilization. The rotation age for each yield table would be that age at which the Mean Annual Increment is at its maximum.

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[6]The density classes are based on the AFS Phase 3 Inventory.

The scatter diagrams for all classes showed a large variability with no apparent trends. This was expected, considering that:

1. The plots were obtained through point sampling.
2. There was no differentiation for site.
3. In the current stands, there was no differentiation for density; in the regenerated stands, two density classes were grouped together.

However, the adjusted r^2 values compared quite favorably to those obtained by the AFS and the B.C. Ministry of Forests for the respective forests under their jurisdictions.

A listing of the derived functions with the corresponding adjusted r^2 values, and the resultant yield tables, is presented for each aggregation of stands; in Appendix 1.

4.3.2 Stand Statistics

The code, age, area, and accessibilty for each stand is provided in Appendix I – Run N30.9C. In the base run, it is assumed that all of the forest is 100% accessible in the first planning period. This obviously does not represent the real situation or "harvest reality". It was agreed, however, that because of the length of time required to map out the Timber RAM harvest schedule (approximately 120 man-days), the harvest realities would not be taken into account until the final intensive run is agreed upon.

4.4 Management Alternatives

Specifications regarding the type of management used on the forest, the youngest age to be harvested, and the oldest age to be harvested are listed here.

In the base run, the alternate clear cut (ACC) type of management was imitated. Timber RAM does not directly provide for ACC, but it is possible to adequately simulate the system by using the method described by Beck and Phillips (1980).

The AFS required that the management schedule should not allow harvest of any stands before the coniferous component reaches age 70, nor should it allow any stand to exceed 180 years of age. These constraints are easily handled by Timber RAM.

4.5 Results and Discussion

The data, as described in the three preceeding sections, was inserted into a computer file according to the format described by Navon (1971). Timber RAM was then used to find the solution and compile a report. A copy of the input data report, the harvest schedule, the harvest report, and the harvest graph generated from the optimal solution, is found in Appendix 1.

The harvest report shows that the allowable annual cut, for the first ninety years, is 240.239 M cunits / year. The long run sustained yield average, which is the volume that the forest should be able to produce in the long run, is slightly below the average post conversion period cut of 226.641 M cunits / year.

The harvest graph points out a limitation of Timber RAM. As stated before, an even flow constraint was placed upon the harvest for the first nine decades, or the conversion period. In the post conversion period, all flow constraints were virtually lifted, and the harvest level was allowed to fluctuate plus or minus 99% around the average. The lifting of the constraint is necessary, because Timber RAM (unrealistically) harvests all regenerated timber at exactly rotation age. It is assumed that a good forest manager, 90 years down the road, will use a certain amount of professional judgement in his conversion harvest scheduling to obtain even flow.

4.6 Conclusion

It has been shown that appropriate FMA data is available and usable for Timber RAM. The forest management policies required by law and AFS policy have been adequately simulated into the data required for use in Timber RAM. Finally, readable reports have been produced from the FMA data in conjunction with Timber RAM and the available computer facilities.

It is concluded, therefore, that Timber RAM is suitable for use in determining a base allowable annual cut for forest management agreement holders in Alberta.

5. Mixedwood Stand Conversion

5.1 Introduction

Approximately one-half of CANFOR's Forest Management Agreement lease area consists of stands whose overstories consist of both coniferous and deciduous species. Therefore, any successful attempt to increase the coniferous components' growth on these stands will have a significant positive effect on the present AAC.

This section will estimate the effects on the AAC of eliminating the hardwood component from the hardwood-softwood (HS) stands and the softwood-hardwood (SH) stands of CANFOR's lease area – approximately 310,131 acres or 46.4% of the land base.

5.2 Background

Research results dealing with mixedwood stand conversion are outlined in the literature review. Ten year results are available from Lees (1966) and Stenecker (1967), who show periodic volume increases of 20 to 40% and 50%, respectively, for the coniferous component of stands less than 70 years old. Both authors agree that the spruce component of mixedwood stands over 70 years old is too old to respond to release.

Since long term results are not available for this type of treatment, these results are only able to serve as a rough guideline for use in this study.

5.3 Methods

It is assumed that:

1. The treatment occurs in the first planning period.
2. Stands up to and including age 70 may be treated.
3. Total stand growth remains unchanged by the treatments.

The steps involved in the simulation of this treatment were:

1. Determine the base coniferous yield tables.
2. Determine the yield curves for the deciduous component of the mixedwood stands.
3. Add the deciduous growth onto the coniferous yield curve at the appropriate place.

If stands were treated at age 50, the 60 year coniferous volume would contain the base 50 year coniferous volume, plus the total stand growth for that stand for that decade.

4. Create new yield classes to accomodate the above changes. and insert into the Timber RAM data.

5. Define management alternatives to use these new yield classes.

This methodology produced the following increases in volume at the first harvestable age – i.e. age 70 for stands less than 70 years of age, and age 80 for 70 year old stands.

Treated stand	**% Volume Increase at First Harvestable Age**
10 year old HS, SH	16.85
30 year old HS, SH	16.85
50 year old SH	11.55
70 year old SH	7.18
50 year old HS	81.97
70 year old HS	13.66

With the exception of the 50 year old HS stand increases, these figures are conservative when compared to those provided by the literature (20 – 50%). The methodology was was used, however, because:

1. The literature provides only first decade results.
2. The methodology provides for a pattern of increase beyond the first decade, and is based on actual data from the forest.

The functions derived for the deciduous component, along with a more detailed description of the methodology of assimilating this information into Timber RAM, are provided in Appendix 2.

5.4 Results and Discussion

The allowable annual cut for this treatment was increased over the base run by 30.521 M cunits per year to a total of 270.760 M cunits / year. This represents an increase 12.7% over the base run.[7] 185,455 acres.

The post conversion period average – 246.445 M cunits per year – is above the LRSYA of 226.467 M cunits per year, so that this particular run would be deemed acceptable by the AFS for that policy constraint. However, the conversion link has apparently become the limiting factor: the CP cuts are exactly 10% less than the PCA level. A genetic improvement program, although it would not be able to boost CP cuts on its own, could probably improve the efficiency of a mixedwood stand conversion treatment.

5.4.1 Harvest Schedule

The assumption allowed for immediate treatment of all mixedwood stands up to and including age 70 – a total of 185,455 acres. Surprisingly, however, the only stand over 30 years of age which was treated was the 70 year old HS stands. This is probably due to the limiting conversion link of 10% mentioned earlier.

Since only 134,817 acres were treated, the efficiency of treatment is 30,521 / 134,817 = 0.226 (cunits / year)/treated acre. It is therefore possible to draw conclusions as to which age class of the mixedwood stands are the most profitable to convert.

5.5 Conclusion

It is concluded that the scientific research to date, does present a rough guideline on the effects of mixedwood stand conversion on coniferous productivity. There has not been enough evidence to date to call these guidelines "rigorous".

It has been shown that Timber RAM is quite able to handle the problem of increased coniferous productivity resulting from mixedwood stand conversion. As well, from the objective report (provided by RAM) and CP cut statistics, the forest manager is able to calculate an "efficiency of treatment" index, to which other treatments may be compared, and on which monetary calculations may be made.

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[7]See Appendix 2 – Run N33.

6. Genetic Improvement

6.1 Introduction

CANFOR, along with three major forest companies and the AFS, have embarked upon a tree improvement program (Dhir, *et al.*, 1979). The program's main emphasis is improvement of white spruce and lodgepole pine. This part of the study will attempt to:

3. Assimilate the expected results of a tree improvement program into yield curves suitable for use in Timber RAM.
4. Determine the accrued increase (if any) on present AAC from a genetic improvement program on CANFOR's forest management lease area.
5. Determine the long range effects (if any) accruing from a genetic improvement program.

6.2 Methodology

6.2.1 Improvement Schedule

The schedule provided in Table 1 was used as the basis for the genetic improvement Timber RAM run.

The original schedule for Lodgepole pine was given to CANFOR by Dhir (1981)[8]. Dancik (1981)[9] applied the same schedule to the pure Sw stands, with the qualifications that it would take an extra decade to be functional. It was assumed that the Sw-Pl would be regenerated with Pl only, and that there would be enough genetically improved stock available for this purpose. The Sb-Pl stands were assumed to be 50% plantable with improved pine, so the improvement scheduled for pine was halved in value, and applied to these stands. Since the fir-conifer mix stands are assumed to regenerate as white spruce, the regenerated fir-conifer mix stands assumed the white spruce improvement schedule. All of the mixedwood stands were assumed to regenerate with white spruce, and so they were assigned the improvement schedule for white spruce.

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[8]Dhir, N.K. 1981. Personal communication.
[9]Dancik, B.P. 1981. Personal communication.

Table 1: % Volume Increases Due to Genetic Improvement

Decade	Pl	Sw	Fir	Sb/Pl	Sw/Pl	MW
1	0	0	0	0	0	0
2	10	0	0	5	10	0
3	18	10	10	9	18	10
4	30	18	18	15	30	18
5	30	30	30	15	30	30

After the fifth decade, no further volume increases are assumed.

6.2.2 Application to Timber RAM

A printout of the data used for the Timber RAM "genetic" runs is provided in Appendix 3.

It was decided that the genetic improvement program would be applied directly to the base run, so that the alternate clear-cut option would remain in effect. The percentage volume increases would be applied only to the regenerated yields. Results elsewhere in the world all indicate a rotation reduction. If this is true in Alberta, the positive effect on the AAC would be major. At present, however, neither the AFS nor the university geneticists have been able to provide estimates relating genetics to rotation age. Therefore, the rotation ages were assumed to remain the same. If and when estimates of this reduction do become available, Timber RAM can be used to estimate the new AAC.

A detailed explanation of the methods used to assimilate the genetic improvement program is provided in Appendix 3.

Table 1 shows that lodgepole pine stands regenerated in decade 1 would not acquire any improvement from genetic gain. Those areas regenerated in Decade 3 (including the reserve strips of those stands regenerated in Decade 1) would realize a volume increase of 18%. Similarly, stands harvested and regenerated in Decade 2 would show a 10% improvement, while the corresponding reserves, regenerated in Decade 4, would show a 30% improvement. It is assumed that no additional increases will occur after Decade 5.

The same methodology was applied to stands following the white spruce improvement schedule.

6.2.3 Results and Discussion

The results of incorporating the genetic improvement program into the base are presented in Table 2.

Table 2: Statistics from Genetic Run N34I [10]

Run No.	AAC	PCP Ave.	LRSYA	%AAC Imp.
N30.9C	240.239	226.641	226.467	–
N34I	240.284	262.308	271.368	0.02

The harvest schedule for Run N34I is provided in Appendix 3: Run N34I. The increase in AAC due to the genetic program is 0.045 M cunits / year, or 0.02%.

It should be noted that the original genetics Timber RAM run, and all subsequent genetics runs, will give a conservative estimate of AAC in the PCP. The older stands in which the first entry was made by the first or second decade, were re-harvested twice. Since the regenerated volumes are assumed to be the same for both re-harvests, the second re-harvest (or the third harvest) assumes the same genetic improvement schedule which was assigned to the regenerated timber after the first harvest. In all cases, the maximum improvement allowed by the schedule (up to 30%) was not yet attained by the time of harvest for the older stands. These "partially improved" volume figures were therefore used in the third harvest, even though full genetic increases should have been applied. This is a model limitation of Timber RAM.

The improvement schedule provided does not allow any reduction of rotation age. However, many forest managers embark upon a genetic tree improvement program fully expecting to change the shape of the growth curve and therefore the time of the culmination of MAI (eg. Rassmussen, 1982). Reduced rotation ages can be shown to have a significant effect on the present AAC [11]

6.3 Conclusion

It can be concluded that Timber RAM is able to adequately determine the increase in present AAC accruing from a tree improvement program. However, as mentioned earlier, the data cannot, at present, provide for reduced rotation ages, even though intuitively, this would be a logical outcome from a genetic tree improvement program. The increase in AAC presented in this study, on this basis, is therefore conservative.

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[10]Units = M cunits / year
[11]see Part 9: "Regeneration Control".

When considering the long range (i.e. PCP) effects of a genetic improvement program, there is a limitation in the program. As mentioned, the volumes presented for the third harvest of the older stands are only partial improvements. For this particular portion of the study, this does not present a serious problem. However, in forest treatments which cause the PCP to become constraining (eg. mixedwood stand conversion), it is desirable to have the PCP level average as high as possible.

7. Fertilization

7.1 Introduction

CANFOR has been considering the costs and benefits of embarking upon a forest fertilization program. This section will attempt to evaluate such a program by:

1. Reviewing the available literature regarding increased productivity from fertilization.
2. Deriving from the literature, quantitative estimates of possible increased production, due to fertilization.
3. Applying the increase estimates to one timber class – the lodgepole pine stands.
4. Developing methods to adequately simulate these figures into two different fertilization programs:
   (a) a static, one-time treatment carried out immediately on standing timber only.
   (b) A continuous, long term program applied to both current and regenerated stands.
5. Determining, through Timber RAM, the effects on present AAC of both programs.
6. Performing a cost-benefit analysis on the more effective fertilization program.

7.2 Background

Forest fertilization research results from Bella (1979), Weetman *et al.*(1976, 1978, and 1979) and others are provided in the literature review. Dempster (1981), when reporting on the same subject, derived an average volume increase of 12.5 m^3 / ha or 178 ft^3 / acre over a five-year period, for all species. Bella (1978) found that:

1. Nitrogen was the main limiting factor in the soils of the test area.
2. The response lasted no longer than four years.
3. Increase in production could be expected for treatments of up to 200 lb. / acre.
4. Treatments of over 200 lb. / acre did not result in further increases.

7.3 Methodology

7.3.1 Derivation of Estimates

The complete set of research results from Weetman *et al.* (1976, 1978, and 1979), along with the results from Cochrane (1975) and Bella (1978) were averaged for each stand class. Results from black spruce stands were not included in the averaging, since the majority of black spruce stands in the CANFOR lease area occur in swampy sites, while those studied in the Weetman reports were mainly dry elevated sites. In the majority of cases, the response for the treatment consisting of 200 lb. of N per acre was recorded. Cochrane's (1975) results were based on the treatment consisting of 300 lb. / acre.

Since the merchantability standards differed among different studies, and from CANFOR's standards; the results used were taken from the "total volume" category. The average 5-year response in terms of cubic feet per acre, by age class, was fairly constant at approximately 165 ft^3 for age classes 30 to 60. The mean 5-year response for age classes 20 to 90 was 162.481 cubic feet per acre, and since it closely resembles the trend, this figure was used as the basis from which volume increases would be derived for each age class in the yield tables.

7.3.1.1 Merchantability Standards

As stated earlier, the merchantability standards used in the base run were 6/4. It was therefore necessary to translate the total volume increase estimates into estimates based on merchantable timber.

The TPLOT data from the G05 and E08 units was re-compiled by the AFS to include all trees with a stump diameter of 1.0 inches or greater. Non-linear regression analysis was performed on this data to derive yield tables based on total cubic volume per acre for each timber class. [12]. A ratio of merchantable (6/4) volume to total volume was then obtained for each age class. This ratio was used when applying the fertilization increase estimate to the current and regenerated lodgepole pine stands. A description of the methodologies used to assimilate this data into Timber RAM, for both the static and the

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[12]Pollock, A.J. 1982. Development of Local Volume Tables and Growth and Yield Curves. Dept. of Forest Science, University of Alberta. Unpub. rep.

continous fertilization programs, along with the printouts of the respective Timber RAM runs, are provided in Appendix 4.

7.4 Results and Discussion

The static, single treatment fertilization program produced a present AAC of 241.512 M cunits per year, an increase of 1.273 M cunits cut per year over the base run, which showed an average allowable annual cut of 240.239 M cunits. This represented an increase of 0.53%. The conversion link of 10% was not limiting. The PCP average, however, did not reach the level of the LRYSA, a condition not acceptable to the AFS. To remedy this situation, the present AAC would be lowered to boost the PCP average to the LRSYA level.

The Objective Report provided in the printout for run N35.1 (Appendix 4) shows which stands were harvested in the conversion period. In this case, all of the treatment areas were fertilized. The efficiency index (described earlier) can therefore be calculated on the total treatment area - 94,239 acres. The index, based on the single static fertilization program, is 1273 / 94,239 = 0.0135 cunits / year per treated acre. (The efficiency index for mixedwood stand conversion was 0.226 cunits / year per treated acre).

The continuous fertilization program produced an almost identical increase in present AAC - 1.420 M cunits / year for a 0.59% increase over the base AAC. The PCP average dropped only 7% from the CP cut, but was not high enough to reach the LRSYA. The increase in AAC is therefore an over-estimate of what would be allowed from the forest fertilization program.

The Objective Report for this study is presented in the printout for the continuous fertilization program Appendix 4. The report shows that all pine stands were fertilized. The efficiency index is therefore based on the treatment of 94,239 acres, and is calculated to be 1420 / 94,239 = 0.0150 cunits / year per treated acre.

The Objective Report also provides a fertilization schedule for the lodgepole pine stands, based on the continuous fertilization program. The schedule is provided in Table 3 below. It can be seen that immediate treatment is prescribed for only three stands: 90, 110, and 130 year old lodgepole pine. For the other stands in the pine class, the timing of

the treatment varies from 20 to 50 years from the present.

Table 3: Fertilization Results

Timber Class	Present Age	Treatment Age	Cut Period	# Acres Treated
A13	130	130	2.4	2216
A11	110	110	2.5	3023
A09	90	90	2.5	6423
A07	70	90	5.7	13,617
A07	70	100	5.8	19,234
A05	50	80	5.9	3,694
A05	50	90	6.8/6.9	26,056
A03	30	80	7.9	14,437
A01	10	60	7.9	5,538

7.4.1 Cost Benefit Analysis

The fertilization program showing the greatest effect on present AAC is the continuous program. It is also more cost-effective than the static program, since only three stands require immediate fertilization. The cost-benefit analysis is therefore based on the results obtained from the continuous fertilization program.

Estimates of costs for materials and services were obtained through a telephone survey. At the time of writing, it was found that the cheapest form of nitrogen was 46-0-0 fertilizer, selling at $0.14 / pound. (This translates into $.31 / pound of nitrogen.) The only aviation company willing to give an estimate of costs for aerial application of the fertilizer quoted a price of between four and eight cents per pound.[13] For the purposes of this study, it is assumed that the cost of fertilizer will be thirty - one cents per pound, and the cost of application will be six cents per pound. At an application rate of 200 lb. per acre, the cost of treatment per acre is calculated to be $74.00 / acre treated.

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[13]Walker Aviation Co. Ltd.

The schedule provided in the Objective Report and summarized in Table 3 above requires that all lodgepole pine timber classes be fertilized by decade five. Stands A09, A11, and A13, totalling 11,662 acres, are to be treated in the first decade. This would require that, for the first 10 years, 1166.2 acres are fertilized. At a rate of $74.00 per acre, this calculates out to $86,298.80 / year.

The increased AAC provided for by this program is 1.420 M cunits / year, which, at the rate of 6 board feet / cubic foot, translates into an increase of 852,000 board feet per year. The cost per thousand board feet (MBF) is therefore $86,298.80 / 852.00 = $101.29.

The following logging cost estimates were supplied by Andersen (1982) [14]:

Fall, limb, skid, and buck – $6.70 / m^3 or $31.62 / MBF

Road and landing costs – $2.00 / m^3 or $9.44 / MBF

Supervision and camp – $3.30 / m^3 or $15.58 / MBF

Stumpage is currently $3.00 / MBF. A generous estimate for lodgepole pine regeneration is $7.00 / MBF, which is currently charged by the AFS to quota holders. The total logging cost is therefore $66.63 / MBF.

Logging costs applicable to increased cut accruing from a fertilization program would include falling, limbing and bucking, and stumpage, for a total of $34.62 / MBF. The total cost, therefore, for fertilization would be $101.29 + 34.62 = $135.91. If a suitable area of lodgepole pine were available as quota outside the lease area, the price of obtaining this volume would include falling, limbing and bucking; road and landing; supervision and camp; stumpage; and regeneration, for a total of $66.63 / MBF.

Since the increase in present AAC obtained by this study is an overestimate (because of the post conversion period constraints), the actual cost per MBF for this fertilization program would be considerably higher. It is expected that wood from other sources would be available for less than the $69 / MBF premium that the fertilization program would cost. Therefore, the study was discontinued at this point.

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[14] Andersen, C. 1982. Personal communication.

7.5 Conclusion

It has been shown that Timber RAM can be adapted to:

1. Show the effects on present AAC of a static, single treatment fertilization program carried out in the current planning period, and applied to particular timber classes.
2. Show the effects on present AAC of a continuous, long term fertilization program, applied to particular timber classes.
3. Provide an optimal fertilization schedule for a continuous, long term fertilization program.

It is concluded that:

1. There is currently enough empirical data to demonstrate definite trends in stand response to fertilization.
2. The increased in present AAC for CANFOR, based on the trends shown by the empirical data, is not large enough to economically warrant either a static, single treatment fertilization program, or a continuous,long term fertilization program.

8. Density Control

8.1 Introduction

"Density control", as applied here, refers to the non-commercial thinning of overstocked or "doghair" stands of lodgepole pine.

Currently, in CANFOR's lease area, there are approximately 20,000 acres of 10 and 30 year old lodgepole pine, 10,000 acres of which is classified as doghair. [15]Tentative plans have been made to conduct a juvenile spacing program on approximately half of these acres, in conjunction with the AFS.

This section will attempt to simulate the effects of a juvenile spacing program on approximately 5000 acres of overstocked lodgepole pine stands.

8.2 Background

The literature review provides an account of the research carried out to date on this subject. The only figures available showing the effects on volume are given by Johnstone (1981b) in his study of a 22-year old overstocked lodgepole pine stand near Hinton, Alberta. Results were provided 25 years after treatment, for three different categories of trees, and five different spacing regimes, not including controls. The figures from the Johnstone (1981b) report were used as starting data for this study.

8.3 Methods

Increments from Johnstone's (1981b) study were averaged over the three treatments which provided the highest increments for the saw timber component of the forest. The study provided results for a period of up to 25 years after treatment; a pattern of increment was extrapolated and projected to a period of 50 years. Since only 5000 acres out of a total of 20,000 acres of ten and thirty year old lodgepole pine would be affected by this program, the derived increments were quartered and added onto the appropriate yield tables. A detailed explanation of the derivation of the increments, and an explanation of the methods used to assimilate this information into Timber RAM, are

[15]Adams, B. 1982. Personal communication

provided in Appendix 5.

8.4 Results and Discussion

The results of the initial runs in this study were as follows:

AAC – 240.809 M cunits / year

PCP ave. – 223.893 M cunits / year

LRSYA – 226.467 M cunits / year.

These results were not acceptable to the AFS, since the PCP average did not reach the level of the LRSYA. When the conversion link was decreased to 6.2%, the following results were obtained:

AAC – 240.767 M cunits / year.

PCP average – 226.711 M cunits / year

LRSYA – 226.467 M cunits / year.

The increase in volume production due to the juvenile spacing program is therefore 240.767 – 240.239 = 0.528 M cunits / year, representing an increase of 0.24%

The efficiency index, based on treatment of 5000 acres of doghair lodgepole pine, is 528 / 5000 = 0.106 (cunits / year)/acre treated.

The increased volumes did not make any difference to the scheduling of the cuts for either the 10 or the 20 year old lodgepole pine stands.

8.5 Conclusion

It is concluded that Timber RAM is able to adequately assimilate compatable research results from studies on the juvenile spacing of overstocked lodgepole pine stands.

To date, there seems to be only one study carried out (Johnstone, 1981b) which presents increases in volume production due to density control. It is therefore concluded that there is a definite need for more research in this area.

9. Regeneration Control

9.1 Introduction

The AFS has agreed that a 10 year regeneration lag, described earlier, would be suitable for use in determining the base AAC. The AFS also requires that, before harvest of the reserve strips in the alternate clear-cut system, the regenerated stand must be either 20 years old or have an average height of 2 meters.

This study will determine the effects of:

1. Reducing the regeneration lag
2. Reducing the length of time between the initial cut and the cut of the residuals (harvest cycle reduction)
3. A combination of the above.

9.2 Background

9.2.1 Regeneration Lag

CANFOR now claims that the average regeneration lag on all stands under their FMA is five years. As stated earlier in the literature review, this regeneration lag should result in a larger AAC.

9.2.2 Harvest Cycle Reduction

Johnstone's (1976) study shows that lodgepole pine, in Central Alberta, reaches a height of 2 meters (6.5 feet) at between 10 and 13 years of age. For the purposes of this study, it will be assumed that CANFOR will ensure that the regenerated lodgepole pine stands reach a height of 2 meters when the trees are 12 years old.

9.3 Methods

9.3.1 Regeneration Lag

The effect of reducing the regeneration lag was simulated by progressively increasing the value of AVAGE[16] – the volume figures were based on increased average age figures.

For example, the base AAC was estimated using a 10 year regeneration lag. Therefore, if the time since the harvest was 60 years, the average age of the trees would be 50 years, and the volumes of the trees would be calculated from the derived equation, using an age value of 50 years. If, however, the regeneration lag were assumed to be 5 years, the average age of the trees, 60 years after harvest, would be 55 years. The calculations would therefore be based on an increased average age, and the predicted volumes would be larger.

The following regeneration lags were incorporated into the yield functions, which were then used as input data for the Timber RAM program:

7 years – all stands

5 years – all stands

5 years – all stands except lodgepole pine and Sw–Pl classes; 2 years – lodgepole pine and Sw–Pl classes. The effect is to change the yield at rotation, and in some cases to change the rotation age.

9.3.2 Harvest Cycle Reduction

As stated earlier, it was assumed for this portion of the study that CANFOR would ensure that all lodgepole pine stands will have an average height of 2 meters by the time the trees are 12 years old. This assumption was applied only when the 2 year regeneration lag for lodgepole pine and Sw–Pl stands was being simulated, resulting in an effective harvest cycle of 14 years. (The lodgepole pine and the SW–Pl stands were the only stands deemed eligible for this reduction.)

In the base run, the second entry of the alternate clear–cut system did not occur until 20 years after harvest, for all stands. To simulate a 14 year delay, only 40% of the

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[16]AVAGE = the average age of the trees in the stand

lodgepole pine and Sw-Pl stands were subjected to 20 year delay, and 60% were harvested after 10 years, This effect was achieved by dividing the land base for each age class of each stand. 40% of the land base was harvested with a 20 year delay, and 60% with a 10 year delay.

An example is stand A13 – 130 year old lodgepole pine.[17] The original area of 2216 acres was reduced 886 acres. The remaining 60% – 1330 acres – was assigned to stand "P13" – 130 year old lodgepole pine. Stand P13 was subjected to management alternatives which effectively reduced the harvest cycle to 10 years.

These data manipulations resulted in an average delay in harvest of the residuals of 14 years.

9.4 Results and Discussions

Table 4 gives the results of the regeneration control study:

Table 4: Regeneration Control

Run No.	Conv. Link	Regen. Lag	AAC	PCP Ave.	LRSYA
N30.9	.100	10	240.284	223.576	226.467
N30.9C (Base)	.060	10	240.239	226.641	226.467
N37.7	.100	7	240.284	228.906	233.809
N37.7A	.027	7	240.195	233.881	233.809
N37.5	.100	5	254.458	231.326	239.436
N37.5A	.047	5	250.783	239.525	239.436
N37.52P	.100	5,2	255.165	234.387	242.165
N37.52A	.047	5,2	253.626	242.240	242.165
N37.2	.100	5,2	257.004	234.458	242.165
N37.2A	.061	5,2	256.983	242.408	242.165

The printouts for Runs N37.7A, N37.5A, N37.52A, and N37.2A are provided in Appendix 6.

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[17]See Appendix 6, Run N37.2A

A number of points are worth noting at this time.

9.4.1 Seven Year Regeneration Lag

For a conversion link of 10%, the AAC estimated using a 7 year regeneration lag (N37.7) is equal to that of the run which used a 10 year regeneration lag (N30.9). However, for both cases, the LRSYA was higher than the PCP, and the conversion link had to be reduced. This caused the AAC of the Timber RAM run using a 7 year regeneration lag to drop below that of the equivalent run using a 10 year lag.

This is explained by the difference in the gaps between the PCP level and the LRSYA. For the 10 year lag, the gap is 2.891 M cunits / year, and for the 7 year lag, the difference is 4.903 M cunits / year, due to the higher regenerated yields. In order for the schedule to make up this gap, more volume had to be "held back" in the conversion period for the run depicting the 7 year lag, resulting in a lower AAC.

9.4.2 Five year Regeneration Lag

The difference between the base AAC and the run based on a 5 year regeneration lag is 250.783 - 240.239 = 10.544 M cunits / year, or 4.4%. This substantial increase is caused by the reduced rotation age for the mixedwood stands (Stands "F" and "G" in the data), which comprise approximately one half of the total agreement area. This reduction allowed the harvest and re-harvest of six mixedwood stands, totalling 111,594 acres, to take place within the conversion period. The efficiency index, based on 668,031 acres, is 0.016 (cunits / year)/treated acre.

The conversion period is roughly equivalent to the period of time required to cut over the entire forest area once. A shorter conversion period will generally lead to a higher AAC, but a CP longer than any rotation of any stand can lead to double cutting.

The five year regeneration lag has reduced the rotation age of the mixedwood stands. This has allowed for an increased number of stands to be harvested and re-harvested within the conversion period[11]. The increase accruing from the reduced regeneration lag has therefore been enhanced by harvest scheduling.

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[11]See 4.2.3 "Conversion Period"

9.4.3 Two year Regeneration Lag

Run N37.52A shows the effect of a further reduction of the regeneration lag for pure lodgepole pine and Sw-Pl stands. The resulting AAC – 253.626 M cunits per year – represents an increase of 5.6% over the base AAC.

9.4.4 Harvest Cycle Reduction

Run N37.2A shows the effect of allowing the harvest of the residual stands of lodgepole pine, 14 years after the first pass. Regeneration for these stands was assumed to be 2 years.

The resulting allowable annual cut – 256.983 M cunits per year – represents an increase of 1.3% over Run N37.52A, and an increase of 7% over the base AAC.

The efficiency index will be based on the total area of lodgepole pine and SwPl stands, totalling 204,609 acres. The increased AAC accuring from this intensive treatment is 256.983 - 250.783 = 6.200 M cunits per year. The index is then calculated to be 6200/204,609 = 0.020 (cunits / year)/treated acre.

9.5 Conclusion

It has been shown that Timber RAM is a useful model to help determine the effects on present AAC of reducing the regeneration lag and reducing the harvest cycle lag. This study has also pointed one effect of the length of the conversion period. Any measure to reduce rotation age (such as regeneration control) will tend to increase the AAC in two ways – one due to the treatment, and one due to harvest and re-harvest within the conversion period.

10. Combined Intensive Management Program

10.1 Introduction

This section will determine the effect on CANFOR's AAC of an intensive forest management program which combines the following treatments:

1. Genetic improvement
2. Mixedwood stand conversion
3. Regeneration control
4. Density control

The assumptions used for each treatment will be the same as were used for the study of the individual treatment programs.

10.2 Methodology

Since this study integrates four silvicultural treatments, it is impossible to describe the separate methodologies used. The "steps of integration" are described here.

10.2.1 Regeneration Control

To incorporate reduced regeneration lags and reduced harvest cycle for lodgepole pine stands, 5 year regeneration lags for HS, SH, Fir Sw, and Sb-Pl stands; and 2 year regeneration lags for Pl and Sw-Pl stands were assumed. The land base of the Pl and Sw-Pl stands was divided to simulate a 14 year harvest cycle, as described earlier[19].

10.2.2 Genetic Improvement

To incorporate genetic improvement, the regenerated volumes derived in point (1) above, were increased according to the genetic improvement schedule described earlier [20]. The management alternatives followed the same pattern as those set out for the Genetic Improvement Study. However, since a 10 year harvest cycle was assumed for 60% of the Pl and Sb-Pl land base, these stands were assigned a unique set of management

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[19]See 9.3.2 Harvest Cycle Reduction
[20]See Part 6: "Genetic Improvement".

alternatives.[21]

10.2.3 Mixedwood Stand Conversion

The hardwood growth was incremented onto the current coniferous component as described earlier.

The growth curve of each stand 70 years and under became unique because of the treatments. It was therefore necessary to add 11 volume classes to the data set to properly combine the genetic improvement schedules with the mixedwood stand conversion schedules.

10.2.4 Density Control

The current volumes of the 10 and 30 year old lodgepole pine stands were increased to depict the treatment of doghair dessity pine stands. This required the addition of four volume classes, since the lodgepole pine land base was divided to imitate a harvest cycle of 14 years. The schedule of volume increase was described earlier.[22]

10.2.5 Application to Timber RAM

Three different policy constraints were simulated:

N38A	Non – declining even flow in the CP.
N38B	Even flow in the CP, with the PCP average less than the LRSYA for this run.
N38C	Even flow in the CP, with the PCP forced to attain the LRSYA developed in N38B.

A total of 37 volume classes were required to adequately simulate the proposed treatments. The "report generator" portion of Timber RAM was modified to accomodate the increased number. The program can now handle 50 classes.

To obtain even flow in the conversion period, sequential lower and upper bounds had to be set to zero. (A nine decade optimization period with sequential lower bounds only, caused the level of harvest to "jump" after period 5). The harvest graph is provided in Appendix 7, Run N38B.

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[21]See Appendix 7, Run N38A.
[22]See Part 7: "Density Control".

Run N38B showed a higher PCP average than the CP level, but the PCP average was still lower than the LRSYA of 290.446 M cunits / year. A further refinement was made, which set the CP to 10 decades. A harvest volume constraint in the 10th decade forced that decade's harvest to equal 290.446 M cunits / year (The LRSYA from Run N38B). The conversion link was set to 0.0, forcing the PCP average to attain the desired level.

10.3 Results and Discussion

The statistics produced by the combined run are supplied in Table 5.

Table 5: Combined Run Summaries

Run No.	AAC	PCP Ave.	LRSYA	% Imp.
N30.9C (Base)	240.239	226.641	226.467	
N38A	242.258	284.422	293.064	0.84
N38B	274.228	282.614	290.446	14.14
N38C	272.700	290.445	291.193	13.51

Assuming that Run N38C is chosen, the increase of the program would be 272.700 – 240.239 = 32.461 M cunits / year, for an increase of 13.51%.

The LRSYA of N38C was increased from N38B due to the different harvest schedule, necessitated by the change in constraints. However, since the PCP average equalled the LRSYA of RUN 38B, and since neither run registered a decrease in cut level after the conversion period, the programming was stopped at this stage.

Arguments could be made to use either N38A, N38B, or N38C as the representative Timber RAM run for this program. The arguments are:

1. The PCP average is higher than the CP level, which may nullify the conversion link stipulation as mentioned in Part 1,
2. The PCP level is conservative, due to the method of depicting genetic improvement.

10.4 Conclusion

It is concluded that Timber RAM is able to adequately estimate the effect on AAC, for the combined silvicultural program as described. The same would not necessarily be true, however, if a fertilization scheme were included in the combined program.

11. Summary and Recommendations

The following recommendations regarding the use of Timber RAM are provided, based on the development of this study.

1. As stated earlier, tentative agreement was reached between CANFOR and the AFS regarding a base AAC, estimated using Timber Ram. It has been shown, therefore, that Timber RAM "can be used as an aid to reaching agreement between the AFS and an FMA holder in Alberta regarding a base AAC." It is recommended that the use of the 1971 Version of Timber RAM be expanded to aid in the determination of base AAC's for FMA holders in Alberta.
2. The effects on the AAC of mixedwood stand conversion, genetic improvement, fertilization, density control, regeneration control, and a combined intensive management program, have been quantified using Timber RAM, for CANFOR's FMA. It is recommended that the use of the 1971 Version of Timber RAM be expanded to aid in the determination of AAC's based on intensive forest management for FMA holders in Alberta.

A description of the major parameters for each Timber RAM run, and a table of the corresponding results, are presented in Appendix 9.

The following recommendations for future research are provided, based on the development of this study:

1. It is beyond the scope of this study to determine the harvest realities involved for intensive management. It is recommended, however, that this aspect be addressed in a future project.
2. The effect on the present AAC of mixedwood stand conversion was limited by the 10% conversion link. The AAC may be enhanced, therefore, by increasing the regenerated yields. It is recommended that an additional run be undertaken, combining mixedwood stand conversion with a genetic improvement program.
3. To increase the quality of the data used for current and regenerated growth curves, and to document the effects of stand succession, it is recommended that CANFOR establish a system of permanent sample plots.

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13. Appendix 1: Base Run Yield Tables and Printouts

Lodgepole pine

Equations found to be most suitable for the current lodgepole pine stands were:

Volume = −990.5168 + (−269.2358 * X4) for 8/5 utilization, and

Volume = −805.681 + (−237.4557 * X4) for 6/4 utilization.

giving r^2(adj.) values of 0.31 and 0.24 respectively, based on 373 observations.

The yield functions used for the regenerated stand of lodgepole pine were:

Volume = −1085.584 + (−291.7179 * X4) for 8/5 utilization and

Volume = −888.5344 + (−257.9947 * X4) for 6/4 utilization with adjusted r^2 values of 0.339 and 0.277 respectively, The analyses were based on 335 observations.

The current yield table for lodgepole pine stands so derived is presented in Table A.1. All volumes are in cubic feet per acre, and the MAI's (Mean Annual Increment) represent ft^3 / ac. / yr.

Table A.1: Current Yield Table for Lodgepole pine

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
50	50	8.61	.1722	16.91	.3382
60	60	15.34	.2557	22.85	.3808
70	70	21.04	.3005	27.87	.3882
80	80	25.97	.3246	32.22	.4028
90	90	30.32	.3369	36.06	.4007
100	100	34.21	.3421	39.49	.3949
110	110	37.73	.3430	42.60	.3873
120	120	40.95	.3412	45.43	.3786
130	130	43.90	.3377	48.04	.3695
140	140	46.64	.3332	50.45	.3604
150	150	49.19	.3279	52.70	.3514
160	160	51.57	.3223	54.81	.3425
170	170	53.81	.3166	56.78	.3340
180	180	55.93	.3107	58.64	.3258

Table A.2 gives the predicted regenerated yield table for lodgepole pine with 10 year regeneration lag and a 4% cull.

Table A.2: Regenerated yield Table for lodgepole pine

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
60	50	7.63	.1272	16.57	.2761
70	60	14.93	.2133	23.02	.3289
80	70	21.10	.2637	28.48	.3560
90	80	26.44	.2938	33.20	.3689
100	90	31.16	.3116	37.37	.3737
110	100	35.37	.3216	41.10	.3737
120	110	39.19	.3266	44.48	.3706
130	120	42.67	.3282	47.56	.3658
140	130	45.88	.3277	50.39	.3599
150	140	48.84	.3256	53.01	.3534
160	150	51.60	.3225	55.46	.3466
170	160	54.19	.3187	57.74	.3396
180	170	56.61	.3145	59.89	.3327
190	180	58.90	.3100	61.91	.3258

Pure white spruce stands

For the existing pure spruce stands, the derived functions were:

Volume = −1334.925 + (−2.427423 * X2) + (26.5513 * X3) + (−351.6399 * X4) for 8/5 utilization, and

Volume = −1426.213 + (−2.752504 * X2) = (29.48668 * X3) + (−377.583 * X4) for 6/4 utilization,

giving r^2(adj.) values of 0.085 and 0.083 for 8/5 and 6/4 utilization respectively. The analyses were based on 233 observations.

The yield functions used for regenerated white spruce stands were:

Volume = −1085.584 + (−291.7179 * X4) for 8/5 utilization, and

Volume = − 888.5344 + (−257.9947 * X4) for 6/4 utilization.

Adjusted r^2 values for the above equations were 0.045 for 8/5 utilization and 0.043 for 6/4 utilization. The analyses were based on 117 observations.

Tables A.3 and A.4 present the predicted values for current and regenerated coniferous volumes in the pure white spruce stands.

Table A.3: Current Yield Table For White Spruce

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
50	50	10.64	.2128	12.52	.2505
60	60	18.63	.3105	21.00	.3499
70	70	24.22	.3459	26.85	.3835
80	80	28.38	.3547	31.15	.3894
90	90	31.54	.3505	34.38	.3820
100	100	33.96	.3396	36.80	.3680
110	110	35.79	.3253	38.58	.3507
120	120	37.14	.3095	39.85	.3321
130	130	38.10	.2931	40.70	.3131
140	140	38.73	.2766	41.19	.2942
150	150	39.08	.2605	41.37	.2758
160	160	39.18	.2448	41.29	.2581
170	170	39.06	.2298	40.98	.2411
180	180	38.76	.2153	40.46	.2248

Table A.4: Regenerated yield Table For White Spruce

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
60	50	00.00	.0000	00.00	.0000
70	60	12.39	.1770	14.76	.2109
80	70	26.09	.3261	29.76	.3720
90	80	33.46	.3717	37.59	.4176
100	90	37.79	.3779	42.01	.4201
110	100	40.44	.3677	44.55	.4050
120	110	42.08	.3507	45.98	.3832
130	120	43.06	.3313	46.70	.3592
140	130	43.61	.3115	46.95	.3354
150	140	43.86	.2924	46.88	.3126
160	150	43.89	.2743	46.60	.2912
170	160	43.77	.2575	46.15	.2715
180	170	43.54	.2419	45.60	.2533
190	180	43.22	.2275	44.96	.2336

Balsam fir - Conifer Mix Yield Class

The yield functions for the Balsam fir – conifer mix timber class found to be most suitable were:

Volume = 627.5901 + (0.9458929 * X2) + (96.02249 * X3) + (196.6095 * X4) for 8/5 utilization, and

Volume = 954.8736 + (1.384149 * Avage) + (131.0564 * X3) + (311.8828 * X4) for 6/4 utilization

giving r^2(adj.) values of 0.082 and 0.078 respectively. The analyses were based on 216 observations.

It was assumed that the existing balsam fir – conifer mix stands would be regenerated as spruce stands. Therefore, exactly the same values as those used for regenerated spruce stands were used for regenerated fir – conifer mix stands.

Table A.5 gives the predicted values for the standing timber of the fir – conifer mix timber class.

Table A.5: Current Yield Table for Fir - Conifer Mix Stands

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
50	50	12.21	.2442	14.51	.2902
60	60	17.52	.2954	21.07	.3512
70	70	20.21	.2886	23.66	.3381
80	80	21.69	.2711	25.02	.3128
90	90	22.75	.2528	25.89	.2877
100	100	23.61	.2361	26.56	.2656
110	110	24.37	.2215	27.16	.2469
120	120	25.08	.2090	27.73	.2311
130	130	25.77	.1982	28.32	.2179
140	140	26.45	.1890	28.95	.2068
150	150	27.15	.1810	29.61	.1974
160	160	27.85	.1741	30.31	.1894
170	170	28.57	.1680	31.05	.1827
180	180	29.30	.1628	31.84	.1769

Black spruce - pine or Pine - black spruce (Sb-Pl or Pl-Sb) Timber Class The chosen functions used to calculate the yield tables for this class were:

Volume = −172.8707 + (73.6264 * X3) for 8/5 utilization, and

Volume = −235.3595 + (99.52638 * X3) for 6/4 utilization.

R^2(adj.) values obtained were 0.075 and 0.141 for 8/5 and 6/4 utilizations repectively based on 68 observations.

The functions found to be most significant for the regenerated Sb − Pl stands were:

Volume = −177.9053 + (75.69015 * X3) for 8/5 utilization, and

Volume = −234.5603 + (100.0736 * X3) for 6/4 utilization

Adjusted r^2 values for the above equations are 0.071 and 0.135 for 8/5 and 6/4 utilations respectively. The analyses were based on 51 cases.

Tables A.6 and A.7 give the current and regenerated yield tables for the Sb−Pl or Pl−Sb yield class.

Table A.6: Current yield Table for Sb-Pl or Pl-Sb Stands

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
50	50	00.00	.0000	00.00	.0000
60	60	6.54	.1091	8.62	.1436
70	70	10.64	.1520	14.15	.2022
80	80	13.55	.1693	18.08	.2260
90	90	15.80	.1756	21.13	.2348
100	100	17.64	.1764	23.62	.2362
110	110	19.20	.1745	25.72	.2338
120	120	20.55	.1712	27.55	.2295
130	130	21.74	.1672	29.15	.2243
140	140	22.80	.1629	30.59	.2185
150	150	23.76	15.84	31.89	.2126
160	160	24.64	.1540	33.08	.2068
170	170	25.45	.1497	34.18	.2010
180	180	26.20	.1456	35.19	.1955

Table A.7: Regenerated Yield Table for Sb-Pl or Pl-Sb Stands

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
60	50	00.00	.0000	00.00	.0000
70	60	6.70	.0957	8.95	.1279
80	70	10.91	.1364	14.52	.1815
90	80	13.90	.1544	18.47	.2052
100	90	16.22	.1622	21.53	.2153
110	100	18.11	.1646	24.03	.2185
120	110	19.71	.1643	26.15	.2179
130	120	21.10	.1623	27.98	.2153
140	130	22.32	.1594	29.60	.2114
150	140	23.42	.1561	31.05	.2070
160	150	24.40	.1525	32.36	.2022
170	160	25.31	.1489	33.55	.1974
180	170	26.14	.1452	34.65	.1925
190	180	26.91	.1416	35.67	.1877

White spruce - pine or Pine - white spruce Yield Class

The functions found to be most suitable for existing Sw–Pl stands were:

Volume = −208.2148 + (109.94 * X3) for 8/5 utilization, and

Volume = −147.5591 + (103.0077 * X3) for 6/4 utilization

giving r^2(adj.) values of 0.168 and 0.144 for 8/5 utilization and 6/4 utilization respectively, based on 276 observations.

The most suitable functions for Sw–Pl regenerated stands were found to be:

Volume = −277.0016 + (129.7061 * X3) for 8/5 utilization, and

Volume = −205.2443 + (121.2149 * X3) for 6/4 utilization

showing adjusted r^2 values of 0.207 and 0.186 for 8/5 and 6/4 utilizations respectively. 206 observations were used in the analyses.

Table A.8: Current Yield Table for Sw - Pl Stands

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
50	50	6.16	.1233	12.30	.2459
60	60	16.62	.2770	22.09	.3682
70	70	22.74	.3248	27.82	.3975
80	80	27.08	.3384	31.89	.3986
90	90	30.44	.3382	35.04	.3894
100	100	33.19	.3319	37.62	.3762
110	110	35.52	.3229	39.80	.3618
120	120	37.53	.3128	41.69	.3474
130	130	39.31	.3024	43.35	.3335
140	140	40.90	.2921	44.84	.3203
150	150	42.33	.2822	46.19	.3079
160	160	43.65	.2728	47.42	.2963
170	170	44.85	.2639	48.55	.2856
180	180	45.97	.2554	49.59	.2755

Table A.9: Regenerated Yield Table for Sw - Pl Stands

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
60	50	2.97	.0495	10.13	.1689
70	60	15.31	.2187	21.66	.3095
80	70	22.52	.2815	28.41	.3551
90	80	27.64	.3071	33.19	.3688
100	90	31.61	.3161	36.90	.3690
110	100	34.86	.3169	39.93	.3630
120	110	37.60	.3133	42.50	.3541
130	120	39.98	.3075	44.72	.3440
140	130	42.07	.3005	46.68	.3334
150	140	43.95	.2930	48.43	.3229
160	150	45.64	.2853	50.01	.3126
170	160	47.19	.2776	51.46	.3027
180	170	48.62	.2701	52.79	.2933
190	180	49.94	.2628	54.02	.2843

Hardwood - Softwood (HS) and Softwood - Hardwood (SH) Stands

Stands in the HS class include any stand whose major overstory species consists of trembling aspen, balsam poplar (*P. balsamifera* L.), or paper birch (*Betula papyrifera* Marsh.), and whose secondary overstory species is coniferous.

Stands in the SH class include any stand whose major overstory species consists of a coniferous species, but whose secondary overstory species consists of trembling aspen, paper birch, or balsam poplar.

There are difficulties involved in predicting the growth of the coniferous component of a mixedwood stand, using temporary plot data. A static, single sample of the stand is not able to account for stand succession. Hardwood mortality over time would cause the proportion of coniferous trees in any particular land base to increase. This proportional increase would then cause an HS stand to succeed into an SH stand, and an SH stand to succeed into a pure white spruce stand.

These difficulties were borne out by the results of the regression analyses. In both the HS stands and the SH stands, the MAI culminated at age 70, and in the SH stand, the coniferous volume decreased significantly after age 110. Since the age of maximum MAI in the pure white spruce stands was found to be 80, it can be seen that the fitted functions through the temporary plot data are indeed inadequate to represent coniferous growth in mixedwood stands.

To overcome these difficulties, an "average mixedwood yield curve" was derived, using stepwise multiple linear regression analysis on all plots in the HS, SH, and pure Sw stands. It was agreed by CANFOR and the AFS that current mixedwood stands of ages 10 and 30 years would grow according to the average mixedwood curve. Mixedwood stands of age 50 and over were assumed to grow according to their own (SH or HS) growth curves, since these stands were expected to be harvested soon. Regenerated mixedwood stands would grow according to a curve similar to the average mixedwood curve, based on C and D densities only.

The functions found to be the most suitable for the current HS stands were:

Volume = −36.65017 + (42.80201 * X3) for 8/5 utilization, and

Volume = −29.50073 + (43.85173 * X3) for 6/4 utilization, with r^2(adj.) values of 0.032 and 0.027, based on 124 observations.

The functions found to be the most suitable for the current SH stands were:

Volume = −1910.247 + (−4.510039 * X2) + (−8.027728 * X3) + (−528.0288 * X4) for 8/5 utilization, and

Volume = −1930.42 + (−4.609335 * X2) + (−26.26603 * X3) + (−553.5762 * X4) for 6/4 utilization.

R^2(adj.) values were 0.028 and 0.015 respectively, based on 423 observations.

The functions used to predict the volumes of the current average mixedwood stands were:

Volume = −424.8888 + (−0.903614 * X2) + (48.86943 * X3) + (−105.9445 * X4) for 8/5 utilization, and

Volume = −437.4742 + (−1.03487 * X2) + (44.7189 * X3) + (−117.7383 * X4) for 6/4 utilization,

with r^2(adj.) values of 0.048 and 0.036 respectively. 793 observations were used for these regressions.

For the regenerated average mixedwood stands, the functions used were:

Volume = −1423.596 + (−2.49291 * X2) + (4.971964 * X3) + (−338.6915 * X4) for 8/5 utilization, and

Volume = −1621.674 + (−2.936808 * X2) + (−15.9942 * X3) + (−460.8421 * X4) for 6/4 utilization,

with r^2(adj.) values of 0.069 and 0.054 respectively. The regressions were based on 449 observations. The yield tables for the current mixedwood stands are given in Tables A.10, A.11, and A.12. The yield table for regenerated mixedwood is provided in Table A.13.

Table A.10: Current Yield Table for SH Stands

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
50	50	12.60	.2520	17.65	.3529
60	60	18.86	.3143	22.67	.3779
70	70	23.39	.3341	26.59	.3799
80	80	26.56	.3320	29.38	.3672
90	90	28.66	.3184	31.19	.3466
100	100	29.90	.2990	32.21	.3221
110	110	30.45	.2768	32.57	.2961
120	120	30.42	.2535	32.38	.2698
130	130	29.90	.2300	31.71	.2439
140	140	28.96	.2069	30.63	.2188
150	150	27.67	.1845	29.20	.1947
160	160	26.06	.1629	27.47	.1717
170	170	24.18	.1422	25.46	.1498
180	180	22.05	.1225	23.21	.1290

Table A.11: Current Yield Table for HS stands

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
50	50	8.49	.1699	9.81	.1961
60	60	12.56	.2094	13.98	.2329
70	70	14.95	.2135	16.42	.2345
80	80	16.63	.2079	18.15	.2268
90	90	17.95	.1994	19.49	.2165
100	100	19.02	.1902	20.59	.2059
110	110	19.92	.1811	21.51	.1956
120	120	20.71	.1725	22.32	.1860
130	130	21.40	.1646	23.03	.1771
140	140	22.02	.1573	23.66	.1690
150	150	22.58	.1505	24.23	.1616
160	160	23.09	.1443	24.76	.1547
170	170	23.56	.1386	25.24	.1485
180	180	23.99	.1333	25.68	.1427

Table A.12: Current Yield Table for Average MW Stands

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
50	50	12.75	.2551	15.87	.3174
60	60	18.82	.3136	21.66	.3610
70	70	22.54	.3220	25.23	.3604
80	80	25.18	.3148	27.75	.3469
90	90	27.16	.3017	29.62	.3291
100	100	28.68	.2868	31.03	.3103
110	110	29.87	.2715	32.11	.2919
120	120	30.79	.2566	32.93	.2744
130	130	31.51	.2424	33.54	.2580
140	140	32.06	.2290	33.97	.2427
150	150	32.47	.2165	34.27	.2284
160	160	32.76	.2048	34.43	.2152
170	170	32.94	.1938	34.50	.2029
180	180	33.04	.1835	34.47	.1915

Table A.13: Regenerated Yield Table for Mixedwood Stands

Stand Age	Tree Age	8/5 Volumes	MAI	6/4 Volumes	MAI
60	50	11.46	.1909	15.77	.2629
70	60	18.23	.2604	21.75	.3107
80	70	23.31	.2914	26.58	.3322
90	80	27.21	.3023	30.36	.3373
100	90	30.22	.3022	33.29	.3329
110	100	32.54	.2958	35.52	.3229
120	110	34.31	.2859	37.18	.3098
130	120	35.62	.2740	38.36	.2951
140	130	36.55	.2611	39.13	.2795
150	140	37.15	.2477	39.56	.2637
160	150	37.48	.2342	39.68	.2480
170	160	37.56	.2209	39.54	.2326
180	170	37.42	.2079	39.17	.2176
190	180	37.10	.1953	38.59	.2031

1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS. RUN N30.SC, NEW YIELD TABLES,FIR REC WS
ALT. C. CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, MAR 27,1982.

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 3000.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 3
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 15

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER AND UPPER BOUNDS

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

CONVERSION LINE	0.990	0.990
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAG*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE' IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED'

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	9	24		

NOTE' IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5 TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	2.218	1.00				
A11		11	L	3.023	1.00				
A09		9	L	8.423	1.00				
A07		7	L	33.852	1.00				
A05		5	L	29.780	1.00				
A03		3	L	14.437	1.00				
A01		1	L	5.538	1.00				
B13		13	L	8.849	1.00				
B11		11	L	11.383	1.00				
B09		9	L	8.163	1.00				
B07		7	L	4.423	1.00				
B05		5	L	2.982	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	8.087	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.785	1.00				
C07		7	L	0.044	1.00				
C05		5	L	0.851	1.00				
C03		3	L	0.298	1.00				
D13		13	L	10.448	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.673	1.00				
D05		5	L	16.388	1.00				
D03		3	L	27.038	1.00				
D01		1	L	3.887	1.00				
E13		13	L	19.348	1.00				
E11		11	L	14.018	1.00				
E09		9	L	16.843	1.00				
E07		7	L	17.842	1.00				
E05		5	L	11.088	1.00				
E03		3	L	12.051	1.00				
E01		1	L	17.878	1.00				
F13		13	L	2.058	1.00				
F11		11	L	.411	1.00				
F09		9	L	.428	1.00				
F07		7	L	.709	1.00				
F05		5	L	.480	1.00				
F03		3	L	1.322	1.00				
F01		1	L	17.706	1.00				
G13		13	L	10.585	1.00				
G11		11	L	13.228	1.00				
G09		9	L	22.965	1.00				
G07		7	L	19.971	1.00				
G05		5	L	19.489	1.00				
G03		3	L	73.208	1.00				
G01		1	L	4.010	1.00				

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 869.031 THOUSAND ACRES

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6. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT REG	MGMT CODES NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF IMP SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	R		1	0	-1	1	1	4	3	9	3	5
A11	R		1	0	-1	1	1	6	3	8	3	5
A09	R		1	0	-1	1	1	8	3	10	3	5
A07	R		1	0	-1	1	1	10	3	12	3	5
A05	R		1	0	-1	1	3	12	5	14	3	5
A03	R		1	0	-1	1	5	14	7	16	3	5
A01	R		1	0	-1	1	7	16	9	18	3	5
B13	R		2	0	-1	1	1	4	3	9	3	5
B11	R		2	0	-1	1	1	6	3	8	3	5
B09	R		2	0	-1	1	1	8	3	10	3	5
B07	R		2	0	-1	1	1	10	3	12	3	5
B05	R		2	0	-1	1	3	12	5	14	3	5
B03	R		2	0	-1	1	5	14	7	16	3	5
B01	R		2	0	-1	1	7	16	9	18	3	5
C13	R		3	0	-1	1	1	4	3	9	3	5
C11	R		3	0	-1	1	1	6	3	8	3	5
C09	R		3	0	-1	1	1	8	3	10	3	5
C07	R		3	0	-1	1	1	10	3	12	3	5
C05	R		3	0	-1	1	3	12	5	14	3	5
C03	R		3	0	-1	1	5	14	7	16	3	5
D13	R		4	0	-1	1	1	4	3	9	3	5
D11	R		4	0	-1	1	1	6	3	8	3	5
D09	R		4	0	-1	1	1	8	3	10	3	5
D07	R		4	0	-1	1	1	10	3	12	3	5
D05	R		4	0	-1	1	3	12	5	14	3	5
D03	R		4	0	-1	1	5	14	7	16	3	5
D01	R		4	0	-1	1	7	16	9	18	3	5
E13	R		5	0	-1	1	1	4	3	9	3	5
E11	R		5	0	-1	1	1	6	3	8	3	5
E09	R		5	0	-1	1	1	8	3	10	3	5
E07	R		5	0	-1	1	1	10	3	12	3	5
E05	R		5	0	-1	1	3	12	5	14	3	5
E03	R		5	0	-1	1	5	14	7	16	3	5
E01	R		5	0	-1	1	7	16	9	18	3	5
F13	R		7	0	-1	1	1	4	3	9	3	5
F11	R		7	0	-1	1	1	6	3	8	3	5
F09	R		7	0	-1	1	1	8	3	10	3	5
F07	R		7	0	-1	1	1	10	3	12	3	5
F05	R		7	0	-1	1	3	12	5	14	3	5
F03	R		8	0	-1	1	5	14	7	16	3	5
F01	R		8	0	-1	1	7	16	9	18	3	5
G13	R		8	0	-1	1	1	4	3	9	3	5
G11	R		8	0	-1	1	1	6	3	8	3	5
G09	R		8	0	-1	1	1	8	3	10	3	5
G07	R		8	0	-1	1	1	10	3	12	3	5
G05	R		8	0	-1	1	3	12	5	14	3	5
G03	R		8	0	-1	1	5	14	7	16	3	5
G01	R		8	0	-1	1	7	16	9	18	3	5

7. VOLUME DATA

VOL CLASS 1 (PINE 6/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	16.85	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	18.89	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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VOL CLASS 2 (WHITE SPRUCE 8/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.28	0.0	8.28	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	0.0	0.0
8	15.58	0.0	15.58	0.0	21.01	0.0
9	17.19	0.0	17.19	0.0	0.0	0.0
10	18.40	0.0	18.40	0.0	21.01	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VOL CLASS 3 (BALSAM FIR 8/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.26	0.0	7.26	0.0	0.0	0.0
6	10.64	0.0	10.64	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	0.0	0.0
8	12.51	0.0	12.51	0.0	21.01	0.0
9	12.95	0.0	12.95	0.0	0.0	0.0
10	13.28	0.0	13.28	0.0	21.01	0.0
11	13.56	0.0	13.56	0.0	0.0	0.0
12	13.67	0.0	13.67	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.15	0.0	15.15	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

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VOL CLASS 4 (BLACK SPRUCE 8/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	0.0	0.0
9	10.87	0.0	10.87	0.0	12.02	0.0
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.88	0.0	12.88	0.0	12.02	0.0
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.84	0.0	15.84	0.0	0.0	0.0
16	16.34	0.0	16.34	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

VOL CLASS 5 (SW-PL 8/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	0.0	0.0
8	15.95	0.0	15.95	0.0	18.45	0.0
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	18.45	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.65	0.0	21.65	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

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VOL CLASS 8 (HS 8/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.81	0.0	4.81	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	0.0	0.0
7	8.21	0.0	8.21	0.0	15.18	0.0
8	9.08	0.0	9.08	0.0	0.0	0.0
9	9.75	0.0	9.75	0.0	15.18	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.78	0.0	10.78	0.0	0.0	0.0
12	11.18	0.0	11.18	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 7 (SH 8/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	6.83	0.0	6.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	0.0	0.0
7	13.30	0.0	13.30	0.0	15.18	0.0
8	14.88	0.0	14.88	0.0	0.0	0.0
9	15.80	0.0	15.80	0.0	15.18	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.86	0.0	15.86	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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VOL CLASS 8 (MW 8/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.84	0.0	7.84	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	0.0	0.0
7	12.62	0.0	12.62	0.0	15.18	0.0
8	13.86	0.0	13.86	0.0	0.0	0.0
9	14.81	0.0	14.81	0.0	15.18	0.0
10	15.52	0.0	15.52	0.0	0.0	0.0
11	16.06	0.0	16.06	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.98	0.0	16.98	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.28	0.0	17.28	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N30 9C, NEW YIELD TABLES,FIR REG WS
ALT. C. CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, MAR 27,1982.

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CASE OUTPUT=R

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	1	2	3	4	5	6	7	8	9	10
A13,R, 2, 4 2216.000		55.91 (25.23)		60.74* (27.41)						
A11,R, 2, 5 3023.000		68.68 (22.72)			79.68* (26.35)					
A09,R, 2, 5 6423.000		126.85 (19.75)			154.28* (24.02)					
A07,R, 5, 7 4385.629					93.63 (21.30)		105.58* (24.02)			
A07,R, 5, 8 28456.375					606.12 (21.30)			717.95* (25.23)		
A05,R, 6, 8 10523.371						207.84 (19.75)		239.09* (22.72)		
A05,R, 6, 9 9985.184						196.61 (19.75)			238.12* (24.02)	
A05,R, 7, 9 9271.44							197.48 (21.30)		222.70* (24.02)	
A03,R, 7, 9 14437.000							260.30 (18.03)		307.51* (21.30)	
A01,R, 7, 9 5538.000							77.20 (13.94)		99.85* (18.03)	
B13,R, 1, 3 9848.996	200.43 (20.35)		203.78* (20.69)							
B11,R, 1, 3 11282.996	217.65 (19.29)		229.61* (20.35)							
B09,R, 2, 4 9182.996		168.97 (18.40)		183.02* (19.93)						
B07,R, 3, 5			78.20		85.51*					

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4432.996				(17.19)		(19.26)										
B05,R, 5, 7						43.67		49.23*								
2552.000						(17.19)		(19.29)								
B03,R, 7, 9								42.49		47.88*						
2472.000								(17.19)		(19.29)						
B01,R, 7, 9								2.30		2.94*						
171.000								(13.43)		(17.19)						
C13,R, 1, 3	128.39		134.28*													
9067.000	(14.16)		(14.81)													
C11,R, 1, 3	58.61		62.05*													
4361.996	(13.56)		(14.18)													
C09,R, 1, 3	23.12		24.24*													
1765.000	(12.86)		(13.68)													
C07,R, 2, 4		53.10		55.68*												
5043.996		(12.51)		(13.26)												
C05,R, 3, 5			11.25		12.32*											
950.000			(11.83)		(12.95)											
C03,R, 5, 7					3.50		3.83*									
288.000					(11.83)		(12.95)									
D13,R, 2, 4		158.67		172.83*												
10448.000		(15.30)		(16.54)												
D11,R, 2, 5		103.17			119.34*											
7487.000		(13.78)			(15.94)											
D09,R, 2, 5		117.37			144.90*											
9938.827		(11.81)			(14.58)											
D05,R, 3, 5			48.41		54.89*											
3784.472			(12.88)		(14.58)											
D07,R, 5, 7					178.41		202.27*									
13873.000					(12.86)		(14.58)									
D05,R, 7, 9							197.90		224.37*							
15388.996							(12.86)		(14.58)							
D03,R, 7, 9							285.69		347.58*							
27027.996							(10.57)		(12.86)							
D01,R, 7, 9							27.59		41.19*							
3897.000							(7.08)		(10.57)							
E13,R, 1, 3	218.89		230.88*													
9884.793	(21.68)		(23.10)													
E13,R, 1, 4	181.12			188.08*												
8354.242	(21.68)			(23.71)												
E13,R, 2, 4		22.33		23.61*												
985.864		(22.42)		(23.71)												
E11,R, 2, 4		292.21		314.22*												
14015.000		(20.85)		(22.42)												
E09,R, 2, 4		334.29		370.68*												
17772.184		(18.81)		(20.85)												
E08,R, 2, 5		16.36			18.88*											
870.814		(18.81)			(21.68)											
E07,R, 3, 5			12.98		14.74*											
740.691			(17.52)		(19.90)											
E07,R, 4, 6				317.91		352.38*										
16901.305				(18.81)		(20.85)										
E05,R, 5, 7					194.38		220.79*									
11095.000					(17.52)		(19.90)									
E03,R, 7, 9							211.13		238.81*							
12050.996							(17.52)		(19.90)							
E01,R, 7, 9							244.52		307.98*							
17878.992							(13.91)		(17.52)							
F13,R, 1, 3	318.12		292.85*												304.48	
20057.996	(15.86)		(14.60)												(15.18)	
F11,R, 1, 3	413.94		403.02*												385.74	
25410.992	(16.29)		(15.86)												(15.18)	
F09,R, 1, 3	521.49		544.58*												507.45	
33428.000	(15.60)		(16.29)												(15.18)	
F07,R, 2, 4		318.91		349.73*												
21708.996		(14.69)		(16.11)												
F05,R, 4, 6				138.97		152.40*										
9480.000				(14.69)		(16.11)										
F03,R, 5, 8						276.52		309.19*								
19821.996						(13.88)		(15.52)								
F01,R, 7, 9							223.47		262.26*							
17707.992							(12.62)		(14.81)							
G13,R, 1, 3	121.94		128.29*												160.68	
10585.000	(11.52)		(12.12)												(15.18)	
G11,R, 2, 4		27.33		28.97*												
2449.010		(11.16)		(11.83)												
G11,R, 2, 5		109.13			118.52*											
9778.988		(11.16)			(12.12)											
G09,R, 2, 5		236.54			284.58*											
22884.996		(10.30)			(11.52)											
G07,R, 2, 5		181.34			214.88*											

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18970.852		(9.08)			(10.75)					
G05,R, 4, 6				176.78		200.53*				
19468.992				(9.08)		(10.30)				
G03,R, 8, 8						1016.10		1136.16*		
73205.938						(13.88)		(15.52)		
G01,R, 7, 9							80.61		99.39*	
4010.000							(12.82)		(14.81)	
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	144197.94	184290.13	9889.15	45830.30	50888.00	113606.44	129551.19	0.0	0.0	89482.94
M CUNITS	2402.39	2402.39	146.64	533.66	1119.91	1697.07	1820.69	0.0	0.0	1358.35
HARVEST CUTS										
ACRES	0.0	0.0	135843.69	92187.31	90346.38	45830.30	32211.63	132107.63	139506.38	0.0
M CUNITS	0.0	0.0	2253.95	1768.73	1282.48	705.32	581.70	2402.39	2402.39	0.0
TOTAL CUTS										
ACRES	144197.94	184290.13	145732.81	138017.58	141014.38	159436.69	161762.81	132107.63	139506.38	89482.94
M CUNITS	2402.39	2402.39	2402.39	2402.39	2402.39	2402.39	2402.39	2402.39	2402.39	1358.35

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	11	12	13	14	15	16	17	18	19	20
A13,R, 2, 4		41.42		41.42*						
2216.000		(18.69)		(18.69)						
A11,R, 2, 5			55.50		55.50*					
3023.000			(18.69)		(18.69)					
A09,R, 2, 5			120.05		120.05*					
6423.000			(18.69)		(18.69)					
A07,R, 5, 7					82.15		82.15*			
4395.629					(18.69)		(18.69)			
A07,R, 5, 8						531.85		531.85*		
28466.375						(18.69)		(18.69)		
A05,R, 6, 8						196.68		196.68*		
10523.371						(18.69)		(18.69)		
A05,R, 6, 9							186.06		186.06*	
9955.184							(18.69)		(18.69)	
A05,R, 7, 9							173.28		173.28*	
9271.441							(18.69)		(18.69)	
A03,R, 7, 9							269.83		269.83*	
14437.000							(18.69)		(18.69)	
A01,R, 7, 9							103.51		103.51*	
5538.000							(18.69)		(18.69)	
B13,R, 1, 3	206.93		206.93*							
9848.898	(21.01)		(21.01)							
B11,R, 1, 3	237.06		237.06*							
11282.898	(21.01)		(21.01)							
B09,R, 2, 4		192.93		192.93*						
9182.898		(21.01)		(21.01)						
B07,R, 3, 5			93.14		93.14*					

4432.938			(21.01)		(21.01)					
B05,R, 5, 7 2552.000					53.82 (21.01)		53.82* (21.01)			
B03,R, 7, 5 2472.000							51.94 (21.01)		51.94* (21.01)	
B01,R, 7, 5 171.000							3.59 (21.01)		3.59* (21.01)	
C13,R, 1, 3 9067.000	190.50 (21.01)		190.50* (21.01)							
C11,R, 1, 3 4381.938	92.07 (21.01)		92.07* (21.01)							
C09,R, 1, 3 1785.000	37.50 (21.01)		37.50* (21.01)							
C07,R, 2, 4 5043.938		105.97 (21.01)		105.97* (21.01)						
C05,R, 3, 5 951.000			19.98 (21.01)		19.98* (21.01)					
C03,R, 5, 7 298.000					6.22 (21.01)		6.22* (21.01)			
D13,R, 2, 4 10449.000			125.80 (12.02)		125.80* (12.02)					
D11,R, 2, 5 7487.000				89.99 (12.02)		89.99* (12.02)				
D09,R, 2, 5 9838.527				118.48 (12.02)		118.48* (12.02)				
D09,R, 3, 5 3784.472				45.25 (12.02)		45.25* (12.02)				
D07,R, 5, 7 13873.000						166.75 (12.02)		166.75* (12.02)		
D05,R, 7, 5 15386.938								184.98 (12.02)		184.98* (12.02)
D03,R, 7, 5 27027.938								324.88 (12.02)		324.88* (12.02)
D01,R, 7, 5 3897.000								46.84 (12.02)		46.84* (12.02)
E13,R, 1, 3 9894.752	184.40 (18.45)		184.40* (18.45)							
E13,R, 1, 4 8354.242		154.14 (18.45)		154.14* (18.45)						
E13,R, 2, 4		18.38		18.38*						

895.884		(18.45)		(18.45)						
E11,R, 2, 4 14015.000		258.58 (18.45)		258.58* (18.45)						
E09,R, 2, 4 17772.184		327.90 (18.45)		327.90* (18.45)						
E09,R, 2, 5 870.814			16.07 (18.45)		16.07* (18.45)					
E07,R, 3, 5 740.891			13.67 (18.45)		13.67* (18.45)					
E07,R, 4, 5 16901.305				311.83 (18.45)		311.83* (18.45)				
E05,R, 5, 7 11085.000					204.70 (18.45)		204.70* (18.45)			
E03,R, 7, 5 12050.938							222.34 (18.45)		222.34* (18.45)	
E01,R, 7, 5 17578.992							324.33 (18.45)		324.33* (18.45)	
F13,R, 1, 3 20057.938		304.48* (15.18)							304.48 (15.18)	
F11,R, 1, 3 28410.992		385.74* (15.18)							385.74 (15.18)	
F09,R, 1, 3 33428.000		507.45* (15.18)							507.45 (15.18)	
F07,R, 2, 4 21708.938	329.54 (15.18)		329.54* (15.18)							329.54 (15.18)
F05,R, 4, 5 9480.000			143.80 (15.18)		143.80* (15.18)					
F03,R, 6, 5 19921.938					302.42 (15.18)		302.42* (15.18)			
F01,R, 7, 5 17707.892						266.81 (15.18)		266.81* (15.18)		
G13,R, 1, 3 10585.000		160.68* (15.18)							160.68 (15.18)	
G11,R, 2, 4 2449.010	37.18 (15.18)		37.18* (15.18)							37.18 (15.18)
G11,R, 2, 5 9778.938		148.45 (15.18)		148.45* (15.18)						
G09,R, 2, 5 22964.938		348.81 (15.18)		348.81* (15.18)						
G07,R, 2, 5		303.18		303.18*						

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19970.992		(15.18)		(15.18)						
G05,R, 4, 6			295.54		295.54*					
19468.992			(15.18)		(15.18)					
G03,R, 6, 8					1111.27		1111.27*			
73205.938					(15.18)		(15.18)			
G01,R, 7, 9						60.87		60.87*		
4010.000						(15.18)		(15.18)		
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	70518.75	110295.19	55819.48	38091.30	111465.56	74570.69	71474.58	48313.99	89482.94	24158.00
M CUNITS	1315.17	1899.52	884.13	566.53	1760.38	1224.98	1334.88	866.69	1358.35	366.72
HARVEST CUTS										
ACRES	0.0	89482.94	70518.75	110295.19	55819.48	38091.20	111465.56	74570.69	71474.58	48313.95
M CUNITS	0.0	1358.35	1315.17	1899.52	884.13	566.53	1760.38	1224.98	1334.88	866.69
TOTAL CUTS										
ACRES	70518.75	199778.13	126338.19	148386.44	167285.00	112691.94	182941.13	120884.63	160957.50	70471.94
M CUNITS	1315.17	3257.88	2199.31	2466.05	2644.51	1791.50	3095.26	1781.66	2693.23	923.41

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL02 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	21	22	23	24	25	26	27	28	29	30
				TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)						
A13,R, 2, 4		41.42		41.42*						
2216.000		(18.69)		(18.69)						
A11,R, 2, 5			56.50							
3023.000			(18.69)							
A09,R, 2, 5			120.05							
6423.000			(18.69)							
A07,R, 5, 7										
4395.629										
A07,R, 5, 8										
28456.375										
A05,R, 6, 8										
10523.371										
A05,R, 6, 9										
9955.184										
A05,R, 7, 9										
9271.441										
A03,R, 7, 9										
14437.000										
A01,R, 7, 9										
5538.000										
B13,R, 1, 3	206.93		206.93*							
9848.996	(21.01)		(21.01)							
B11,R, 1, 3	237.06		237.06*							
11282.996	(21.01)		(21.01)							
B09,R, 2, 4		192.93		192.93*						
9182.996		(21.01)		(21.01)						
B07,R, 3, 5			93.14							

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4432.996		(21.01)		
B05,R, 5, 7 2852.000				
B03,R, 7, 9 2472.000				
B01,R, 7, 9 171.000				
C13,R, 1, 3 9087.000	190.50 (21.01)		190.50* (21.01)	
C11,R, 1, 3 4361.996	92.07 (21.01)		92.07* (21.01)	
C09,R, 1, 3 1785.000	37.50 (21.01)		37.50* (21.01)	
C07,R, 2, 4 5043.996		105.97 (21.01)		105.97* (21.01)
C05,R, 3, 5 951.000			19.96 (21.01)	
C03,R, 5, 7 285.000				
D13,R, 2, 4 10449.000				125.60 (12.02)
D11,R, 2, 5 7487.000				
D09,R, 3, 5 8936.527				
D08,R, 3, 5 2784.472				
D07,R, 5, 7 13873.000				
D05,R, 7, 9 15388.996				
D03,R, 7, 9 27027.996				
D01,R, 7, 9 3897.000				
E13,R, 1, 3 8994.783	184.40 (18.45)		184.40* (18.45)	
E13,R, 1, 4 8364.242		154.14 (18.45)		154.14* (18.45)
E13,R, 2, 4		18.36		18.36*

935.564		(18.45)		(18.45)
E11,R, 2, 4 14015.000		258.58 (18.45)		258.58* (18.45)
E09,R, 3, 4 17772.184		327.90 (18.45)		327.90* (18.45)
E09,R, 2, 5 870.814			16.07 (18.45)	
E07,R, 3, 5 740.891			13.67 (18.45)	
E07,R, 4, 6 16901.308				311.83 (18.45)
E05,R, 5, 7 11085.000				
E03,R, 7, 9 12080.996				
E01,R, 7, 9 17574.992				
F13,R, 1, 3 20067.996	304.48* (15.18)			
F11,R, 1, 3 28410.992	385.74* (15.18)			
F09,R, 1, 3 33429.000	507.45* (15.18)			
F07,R, 2, 4 21708.996		328.54* (15.18)		
F05,R, 4, 6 9480.000		143.80 (15.18)		143.80* (15.18)
F03,R, 6, 8 19921.996				302.42 (15.18)
F01,R, 7, 9 17707.992				
G13,R, 1, 3 10585.000	160.68* (15.18)			
G11,R, 2, 4 2449.010		37.18* (15.18)		
G11,R, 2, 5 9778.996	148.45 (15.18)		148.45* (15.18)	
G09,R, 2, 5 22884.996	348.81 (15.18)		348.81* (15.18)	
G07,R, 2, 5	303.18		303.18*	

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19370.892	(15.18)		(15.18)							
S05,R, 4, 6		295.54		295.54*						
19468.892		(15.18)		(15.18)						
S03,R, 5, 8				1111.27						
73205.938				(15.18)						
S01,R, 7, 9										
4010.000										
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	99075.69	88509.31	16441.48	120478.18	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1748.87	1538.45	318.40	1851.11	0.0	0.0	0.0	0.0	0.0	0.0
HARVEST CUTS										
ACRES	89482.94	24156.00	89078.69	88509.31	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1358.35	388.72	1748.87	1538.45	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CUTS										
ACRES	188558.63	110667.31	105517.13	208987.50	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	3107.02	1905.17	2068.08	3389.55	0.0	0.0	0.0	0.0	0.0	0.0

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21821.42 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,R, 2, 4	2218.00	116.65	52.64
A11,R, 2, 5	3023.00	148.34	49.07
A09,R, 2, 5	6423.00	281.13	43.77
A07,R, 5, 7	4385.63	198.21	45.32
A07,R, 5, 8	28466.38	1324.07	46.53
A05,R, 5, 8	10823.37	446.93	42.47
A05,R, 5, 9	9955.18	435.74	43.77
A05,R, 7, 9	9271.44	420.18	45.32
A03,R, 7, 9	14437.00	567.61	39.33
A01,R, 7, 9	5536.00	177.05	31.97
B13,R, 1, 3	9849.00	404.20	41.04
B11,R, 1, 3	11283.00	447.28	39.64
B09,R, 2, 4	9183.00	351.98	38.33
B07,R, 3, 5	4433.00	161.72	36.48
B05,R, 5, 7	2552.00	93.10	36.48
B03,R, 7, 9	2472.00	90.18	36.48
B01,R, 7, 9	171.00	5.24	30.62
C13,R, 1, 3	9067.00	262.67	28.97
C11,R, 1, 3	4382.00	121.58	27.74
C09,R, 1, 3	1785.00	47.36	26.53
C07,R, 2, 4	5044.00	130.08	25.79
C05,R, 3, 5	951.00	23.67	24.78
C03,R, 5, 7	296.00	7.33	24.78
D13,R, 2, 4	10449.00	332.70	31.84
D11,R, 2, 5	7487.00	222.51	29.72
D09,R, 2, 5	9938.53	262.28	26.39
D09,R, 3, 5	3764.47	103.30	27.44
D07,R, 5, 7	13873.00	380.67	27.44
D05,R, 7, 9	15388.00	422.27	27.44
D03,R, 7, 9	27028.00	633.27	23.43
D01,R, 7, 9	3887.00	66.76	17.65
E13,R, 1, 3	9994.79	447.57	44.78
E13,R, 1, 4	8384.24	379.20	45.39
E13,R, 2, 4	995.86	45.84	46.13
E11,R, 2, 4	14015.00	606.42	43.27
E09,R, 2, 4	17772.18	704.84	39.66
E09,R, 2, 5	870.81	35.26	40.49
E07,R, 3, 5	740.69	27.72	37.42
E07,R, 4, 6	16801.30	670.31	39.66
E05,R, 5, 7	11085.00	415.17	37.42
E03,R, 7, 9	12051.00	450.85	37.42
E01,R, 7, 9	17578.89	552.51	31.43

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F13,R, 1, 3	20058.00	610.97	30.46	
F11,R, 1, 3	25410.99	818.96	32.18	
F09,R, 1, 3	33429.00	1068.05	31.88	
F07,R, 2, 4	21708.00	666.64	30.80	
F05,R, 4, 6	9460.00	291.37	30.80	
F03,R, 6, 8	19822.00	585.71	29.40	
F01,R, 7, 9	17707.99	485.73	27.43	
G13,R, 1, 3	10585.00	250.23	23.64	
G11,R, 2, 4	2449.01	56.30	22.99	
G11,R, 2, 5	9778.99	227.65	23.28	
G09,R, 2, 5	22965.00	501.10	21.82	
G07,R, 2, 5	18970.99	396.22	18.84	
G05,R, 4, 6	19466.99	377.31	19.38	
G03,R, 6, 8	73205.94	2182.26	29.40	
G01,R, 7, 9	4010.00	109.99	27.43	

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21621.42 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2284.87 M CUNITS/DECADE

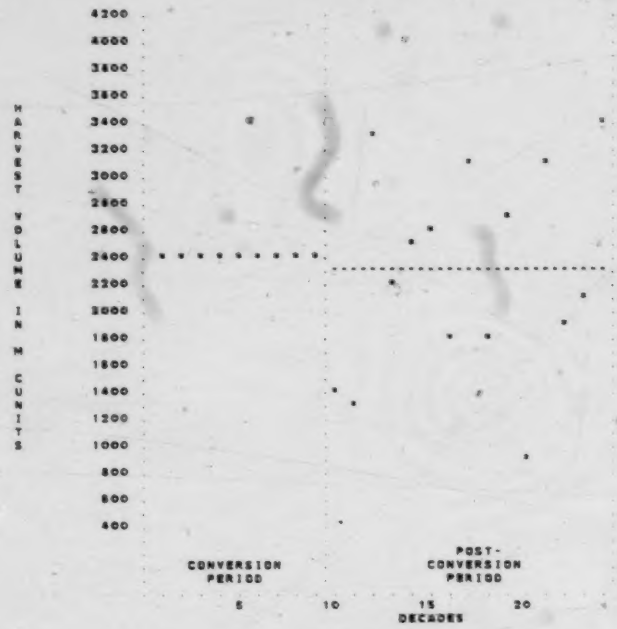
AVERAGE OF POST-CONVERSION PERIODIC HARVESTS=. 2286.41 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	144198.	2402.39	2402.39	0.	0.0	0.0	144198.	2402.39	2402.39
2	0.	0.0	0.0	184290.	2402.39	4804.78	0.	0.0	0.0	184290.	2402.39	4804.78
3	0.	0.0	0.0	9889.	148.84	4953.62	135844.	2253.55	2253.55	145733.	2402.39	7207.17
4	0.	0.0	0.0	45830.	633.68	5587.27	82187.	1766.73	4022.28	138018.	2402.39	9609.55
5	0.	0.0	0.0	80588.	1119.91	6707.18	80348.	1282.48	5304.76	161014.	2402.39	12011.94
6	0.	0.0	0.0	113606.	1697.07	8404.25	45830.	705.32	6010.08	159437.	2402.39	14414.33
7	0.	0.0	0.0	129551.	1820.69	10224.93	32212.	581.70	6591.78	161763.	2402.39	16816.72
8	0.	0.0	0.0	0.	0.0	10224.93	132108.	2402.39	8994.17	132108.	2402.39	19219.11
9	0.	0.0	0.0	0.	0.0	10224.93	139506.	2402.39	11396.55	139506.	2402.39	21621.50
10	0.	0.0	0.0	89483.	1358.35	11583.28	0.	0.0	11396.55	89483.	1358.35	22979.84
11	0.	0.0	0.0	70519.	1315.17	12898.45	0.	0.0	11396.55	70519.	1315.17	24295.01
12	0.	0.0	0.0	110295.	1899.52	14797.97	89483.	1358.35	12754.90	199778.	3257.88	27552.88
13	0.	0.0	0.0	55819.	884.13	15682.11	70519.	1315.17	14070.07	126338.	2199.31	29752.19
14	0.	0.0	0.0	38081.	566.53	16248.64	110295.	1899.52	15969.59	148376.	2466.06	32218.25
15	0.	0.0	0.0	111487.	1780.38	18009.01	55819.	884.13	16853.73	167288.	2644.51	34862.75
16	0.	0.0	0.0	74571.	1224.98	19233.97	38091.	566.53	17420.26	112662.	1791.50	36654.25
17	0.	0.0	0.0	71475.	1334.88	20568.85	111487.	1780.38	19180.63	182941.	3095.26	39749.50
18	0.	0.0	0.0	46314.	556.69	21125.54	74571.	1224.98	20405.59	120885.	1781.66	41531.16
19	0.	0.0	0.0	89483.	1358.35	22483.89	71475.	1334.88	21740.47	160958.	2693.23	44224.39
20	0.	0.0	0.0	24158.	366.72	22850.61	46314.	556.69	22297.16	70472.	923.41	45147.80
21	0.	0.0	0.0	89076.	1748.67	24599.27	89483.	1358.35	23655.51	188559.	3107.02	48254.81
22	0.	0.0	0.0	86509.	1638.45	26137.72	24158.	366.72	24022.23	110667.	1805.17	50159.98
23	0.	0.0	0.0	18441.	319.40	26457.11	89076.	1748.67	25770.89	113517.	2068.08	52228.06
24	0.	0.0	0.0	120478.	1851.11	28308.22	86509.	1638.45	27309.34	206988.	3389.56	55617.60

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

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14. Appendix 2: Mixedwood Stand Conversion Methodology and Printouts

The base coniferous yield tables for the mixedwood stands were determined in the compilation of the base run. To determine the growth curves for the deciduous component, data was selected from the TPLOT data files using the same criterion as in the base run. Hardwood-softwood stands showed a deciduous major overstory species and a coniferous secondary or tertiary overstory species. Softwood-hardwood stands were defined as a stand whose major overstory species was coniferous, but whose second, third, or bracketed species was deciduous.

The functions chosen for the deciduous component of the hardwood-softwood stand was:

Volume = −15145.22 + (−4063.977 *X4) + (−.2783456 *X6) for 6/4 utilization, where

X4 = log of the inverse age and X6 = the square of the lagged age.

The r^2(adj.) value for this function was 0.046, based on 130 observations.

The function chosen to represent the growth of the deciduous component in the softwood-hardwood stands was:

Volume = −23405.51 + (−4921.324 *X3) + (−10157.95 *X4) + (−0.1501016 *X6) for 6/4 utilization,

where X3 = log of the lagged age, X4 = log of inverse age, and X6 = the square of the lagged age.

The r^2(adj.) value for this function was 0.048 based on 500 observations.

The methodology for adding the deciduous growth onto the coniferous yield curves is demonstrated in Table A.14 below. In the Timber RAM base run, the G05 and G07 stands are assigned to HS timber class, and are assigned ages 50 and 70 respectively.

Table A.14: Derivation of Growth Curves for Mixedwood Stand Treatment. [23]

Conifer Age	Conifer Volume	Decid. Volume	Decid. Growth	New Con. Volume	% Increase
50	17.65	3.82		17.65	0.00
60	22.67	4.84	1.02	23.69	4.50
70	26.59	6.84	2.00	29.61	11.36
80	29.38	8.95	2.11	34.51	17.46
90	31.19	10.81	1.86	38.22	22.41

All age groups up to and including age 70 were assumed to be treated. Therefore, the method of simulating treatment of mixedwood stands had to be extended to the 10 and 30 year old age classes.

In the base run, the 10 and 30 year old stands in the SH and HS stands were assigned to a common "average" yield curve, which was constructed through stepwise multiple linear regression analysis on a data base composed of SH, HS, and pure Sw. In these younger ages, it was therefore necessary to determine the deciduous volume of the pure spruce stands, combine that information with similar data from the HS and SH stands, and perform stepwise multiple linear regression on the resulting combined data base.

The chosen function for this regression is:

Volume = −3450.109 + (77.57051 * AVAGE) + (−0.3136390 * X5) for 6/4 utilization, where X5 = $AVAGE^2$.

The r^2(adj.) for this regression was 0.107 based on 972 observations.

Table A.15 demonstrates how the converted mixedwood stand yield tables were derived for 10 and 30 year old mixedwood stands.

---

[23]Run N.33, Volume Class 9: Treatment of 50 year old HS

Table A.15: Derivation of Yield Tables Simulating Conversion of 10 Year Old MW Stands. [24]

Conifer Age	Conifer Volume	Decid. Volume	Decid. Growth	New Conifer Volume	% Increase in Vol.
50	15.87			15.87	0.00
60	21.66	0.75	0.72	22.38	3.32
70	25.23	4.43	3.53	29.48	16.85
80	27.75	7.48	2.93	34.93	25.87
90	29.62	9.91	2.33	39.13	32.11

Since both the 10 and 30 year old stands would be treated before the coniferous component becomes measurable (at age 50), the increased growth from conversion was added directly onto the coniferous volume at age 50, although the increased growth at age 50 was zero cunits. Only one additional volume class (Class No. 9) was necessary for the 10 and 30 year old mixedwood stands.

The yield tables for the deciduous component differ from those of the coniferous component in two major ways:

1. The trees become merchantable at an earlier age.
2. The older stands' volumes decrease to zero.

Therefore the regression procedures were changed to suit the analyses of this group of data. These changes include:

1. Reducing the lag time on the lagged age from 40 to 25 years.
2. Adding a quadratic transformation of age (avage^2) for consideration by the regression. This allowed the older ages to attain a volume of zero.
3. Removing from consideration any data over 180 years of age, because the deciduous volumes for the over – 180 component were zero. If these volumes were allowed to remain, the regression would try to minimize the distance between the regression curve and zero, thereby "flattening" the shape of the curve. Removal of this data allowed a steeper ascent from the origin, a steeper descent to the x-axis, and a better fit to the data.

---

[24]Volume Class No. 9, Treatment of 10 year old MW, Run N33, Appendix 2

Each of the converted stands was given an extra management alternative in the Timber RAM data file, to which the stand was assigned. This allowed Timber RAM to choose between a converted mixedwood stand or a non-converted mixedwood stand.

1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN N33, NEW YIELD TABLES,FIR REG SW
ALT C CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, MAP 27,1982

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2000.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 8
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 18

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER AND UPPER BOUNDS

2 CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

	0.990	0.100
CONVERSION LINK		
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3 PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAC*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE: IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4 ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED:

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	3	24		

NOTE: IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5 TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	2.216	1.00				
A11		11	L	3.023	1.00				
A09		9	L	8.423	1.00				
A07		7	L	32.852	1.00				
A05		5	L	29.750	1.00				
A03		3	L	14.437	1.00				
A01		1	L	5.538	1.00				
B13		13	L	9.849	1.00				
B11		11	L	11.283	1.00				
B09		9	L	9.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.852	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	9.087	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.785	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.951	1.00				
C03		3	L	0.298	1.00				
D13		13	L	10.448	1.00				
D11		11	L	7.487	1.00				
D09		9	L	12.703	1.00				
D07		7	L	13.873	1.00				
D05		5	L	15.388	1.00				
D03		3	L	27.028	1.00				
D01		1	L	2.887	1.00				
E13		13	L	19.348	1.00				
E11		11	L	14.015	1.00				
E09		9	L	16.643	1.00				
E07		7	L	17.842	1.00				
E05		5	L	11.095	1.00				
E03		3	L	12.081	1.00				
E01		1	L	17.578	1.00				
F13		13	L	20.058	1.00				
F11		11	L	25.411	1.00				
F09		9	L	33.429	1.00				
F07		7	L	21.709	1.00				
F05		5	L	9.480	1.00				
F03		3	L	19.822	1.00				
F01		1	L	17.708	1.00				
G13		13	L	10.585	1.00				
G11		11	L	12.228	1.00				
G09		9	L	22.865	1.00				
G07		7	L	18.871	1.00				
G05		5	L	19.489	1.00				
G03		3	L	73.206	1.00				
G01		1	L	4.010	1.00				

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 869.031 THOUSAND ACRES

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6. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT CODES REG	NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF IMP SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	R		1	0	-1	1	1	4	3	6	3	5
A11	R		1	0	-1	1	1	6	3	8	3	5
A09	R		1	0	-1	1	1	8	3	10	3	5
A07	R		1	0	-1	1	1	10	3	12	3	5
A05	R		1	0	-1	1	3	12	5	14	3	5
A03	R		1	0	-1	1	5	14	7	16	3	5
A01	R		1	0	-1	1	7	16	9	18	3	5
B13	R		2	0	-1	1	1	4	3	6	3	5
B11	R		2	0	-1	1	1	6	3	8	3	5
B09	R		2	0	-1	1	1	8	3	10	3	5
B07	R		2	0	-1	1	1	10	3	12	3	5
B05	R		2	0	-1	1	3	12	5	14	3	5
B03	R		2	0	-1	1	5	14	7	16	3	5
B01	R		2	0	-1	1	7	16	9	18	3	5
C13	R		3	0	-1	1	1	4	3	6	3	5
C11	R		3	0	-1	1	1	6	3	8	3	5
C09	R		3	0	-1	1	1	8	3	10	3	5
C07	R		3	0	-1	1	1	10	3	12	3	5
C05	R		3	0	-1	1	3	12	5	14	3	5
C03	R		3	0	-1	1	5	14	7	16	3	5
D13	R		4	0	-1	1	1	4	3	6	3	5
D11	R		4	0	-1	1	1	6	3	8	3	5
D09	R		4	0	-1	1	1	8	3	10	3	5
D07	R		4	0	-1	1	1	10	3	12	3	5
D05	R		4	0	-1	1	3	12	5	14	3	5
D03	R		4	0	-1	1	5	14	7	16	3	5
D01	R		4	0	-1	1	7	16	9	18	3	5
E13	R		5	0	-1	1	1	4	3	6	3	5
E11	R		5	0	-1	1	1	6	3	8	3	5
E09	R		5	0	-1	1	1	8	3	10	3	5
E07	R		5	0	-1	1	1	10	3	12	3	5
E05	R		5	0	-1	1	3	12	5	14	3	5
E03	R		5	0	-1	1	5	14	7	16	3	5
E01	R		5	0	-1	1	7	16	9	18	3	5
F13	R		7	0	-1	1	1	4	3	6	3	5
F11	R		7	0	-1	1	1	6	3	8	3	5
F09	R		7	0	-1	1	1	8	3	10	3	5
F07	R		7	0	-1	1	1	10	3	12	3	5
F07	A		11	0	-1	1	1	10	3	12	3	5
F05	R		7	0	-1	1	3	12	5	14	3	5
F05	A		10	0	-1	1	3	12	5	14	3	5
F03	R		8	0	-1	1	5	14	7	16	3	5
F03	A		9	0	-1	1	5	14	7	16	3	5
F01	R		8	0	-1	1	7	16	9	18	3	5
F01	A		9	0	-1	1	7	16	9	18	3	5
G13	R		8	0	-1	1	1	4	3	6	3	5
G11	R		8	0	-1	1	1	6	3	8	3	5
G09	R		8	0	-1	1	1	8	3	10	3	5
G07	R		8	0	-1	1	1	10	3	12	3	5
G07	A		13	0	-1	1	1	10	3	12	3	5
G05	R		8	0	-1	1	3	12	5	14	3	5
G05	A		12	0	-1	1	3	12	5	14	3	5
G03	R		8	0	-1	1	5	14	7	16	3	5
G03	A		9	0	-1	1	5	14	7	16	3	5
G01	R		8	0	-1	1	7	16	9	18	3	5
G01	A		9	0	-1	1	7	16	9	18	3	5

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7 VOLUME DATA

VOL CLASS 1 (PINE 8/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	18.11	0.0	18.11	0.0	18.69	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	18.69	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 2 (WHITE SPRUCE 8/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	6.28	0.0	6.28	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	0.0	0.0
8	15.58	0.0	15.58	0.0	21.01	0.0
9	17.18	0.0	17.18	0.0	0.0	0.0
10	18.40	0.0	18.40	0.0	21.01	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

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VOL CLASS 3 (BALSAM FIR 6/4, REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.84	0.0	10.84	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	0.0	0.0
8	12.51	0.0	12.51	0.0	21.01	0.0
9	12.95	0.0	12.95	0.0	0.0	0.0
10	13.28	0.0	13.28	0.0	21.01	0.0
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.16	0.0	14.16	0.0	0.0	0.0
14	14.46	0.0	14.46	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.18	0.0	15.18	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	8.04	0.0	8.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.02	0.0
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.88	0.0	12.88	0.0	12.02	0.0
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

University of Alberta

VOL CLASS 5 (SW-PL 8/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	6.15	0.0	6.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	0.0	0.0
8	15.95	0.0	15.95	0.0	15.45	0.0
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	15.45	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 6 (HS 8/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.08	0.0	7.08	0.0	0.0	0.0
6	12.23	0.0	12.23	0.0	0.0	0.0
7	15.44	0.0	15.44	0.0	15.18	0.0
8	17.53	0.0	17.53	0.0	0.0	0.0
9	18.83	0.0	18.83	0.0	15.18	0.0
10	19.55	0.0	19.55	0.0	0.0	0.0
11	19.79	0.0	19.79	0.0	0.0	0.0
12	19.67	0.0	19.67	0.0	0.0	0.0
13	19.24	0.0	19.24	0.0	0.0	0.0
14	18.54	0.0	18.54	0.0	0.0	0.0
15	17.62	0.0	17.62	0.0	0.0	0.0
16	16.51	0.0	16.51	0.0	0.0	0.0
17	15.24	0.0	15.24	0.0	0.0	0.0
18	13.81	0.0	13.81	0.0	0.0	0.0

University of Alberta

VOL CLASS 7 (SH 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	9.77	0.0	9.77	0.0	0.0	0.0
6	14.18	0.0	14.18	0.0	0.0	0.0
7	17.33	0.0	17.33	0.0	15.18	0.0
8	18.65	0.0	18.65	0.0	0.0	0.0
9	21.03	0.0	21.03	0.0	15.18	0.0
10	21.92	0.0	21.92	0.0	0.0	0.0
11	22.35	0.0	22.35	0.0	0.0	0.0
12	22.39	0.0	22.39	0.0	0.0	0.0
13	22.10	0.0	22.10	0.0	0.0	0.0
14	21.65	0.0	21.65	0.0	0.0	0.0
15	20.78	0.0	20.78	0.0	0.0	0.0
16	19.77	0.0	19.77	0.0	0.0	0.0
17	18.59	0.0	18.59	0.0	0.0	0.0
18	17.28	0.0	17.28	0.0	0.0	0.0

VOL CLASS 8 (MW 6/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.94	0.0	7.94	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	0.0	0.0
7	12.82	0.0	12.82	0.0	15.18	0.0
8	13.88	0.0	13.88	0.0	0.0	0.0
9	14.81	0.0	14.81	0.0	15.18	0.0
10	15.52	0.0	15.52	0.0	0.0	0.0
11	16.06	0.0	16.06	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.99	0.0	16.99	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.25	0.0	17.25	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

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VOL CLASS 9 (MW-AW I 6/4)
CLASS NUMBER 9

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.94	0.0	7.94	0.0	0.0	0.0
6	11.18	0.0	11.18	0.0	0.0	0.0
7	14.74	0.0	14.74	0.0	15.18	0.0
8	17.47	0.0	17.47	0.0	0.0	0.0
9	18.57	0.0	18.57	0.0	15.18	0.0
10	21.14	0.0	21.14	0.0	0.0	0.0
11	22.24	0.0	22.24	0.0	0.0	0.0
12	22.91	0.0	22.91	0.0	0.0	0.0
13	23.17	0.0	23.17	0.0	0.0	0.0
14	23.05	0.0	23.05	0.0	0.0	0.0
15	22.55	0.0	22.55	0.0	0.0	0.0
16	21.69	0.0	21.69	0.0	0.0	0.0
17	20.46	0.0	20.46	0.0	0.0	0.0
18	18.92	0.0	18.92	0.0	0.0	0.0

VOL CLASS 10 (SH-AW I 6/4)
CLASS NUMBER 10

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.87	0.0	11.87	0.0	0.0	0.0
7	14.83	0.0	14.83	0.0	15.18	0.0
8	17.28	0.0	17.28	0.0	0.0	0.0
9	19.14	0.0	19.14	0.0	15.18	0.0
10	20.40	0.0	20.40	0.0	0.0	0.0
11	21.11	0.0	21.11	0.0	0.0	0.0
12	21.32	0.0	21.32	0.0	0.0	0.0
13	21.08	0.0	21.08	0.0	0.0	0.0
14	20.42	0.0	20.42	0.0	0.0	0.0
15	19.37	0.0	19.37	0.0	0.0	0.0
16	17.98	0.0	17.98	0.0	0.0	0.0
17	16.20	0.0	16.20	0.0	0.0	0.0
18	14.13	0.0	14.13	0.0	0.0	0.0

University of Alberta

VOL CLASS 11 (SH-AW II 6/4)
CLASS NUMBER 11

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	0.0	0.0
7	13.30	0.0	13.30	0.0	15.18	0.0
8	15.75	0.0	15.75	0.0	0.0	0.0
9	17.80	0.0	17.80	0.0	15.18	0.0
10	18.88	0.0	18.88	0.0	0.0	0.0
11	19.58	0.0	19.58	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.58	0.0	19.88	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

VOL CLASS 12 (HS-AW I 6/4)
CLASS NUMBER 12

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	11.73	0.0	11.73	0.0	0.0	0.0
7	14.84	0.0	14.84	0.0	15.18	0.0
8	17.07	0.0	17.07	0.0	0.0	0.0
9	18.44	0.0	18.44	0.0	15.18	0.0
10	19.17	0.0	19.17	0.0	0.0	0.0
11	19.35	0.0	19.35	0.0	0.0	0.0
12	19.05	0.0	19.05	0.0	0.0	0.0
13	18.30	0.0	18.30	0.0	0.0	0.0
14	17.12	0.0	17.12	0.0	0.0	0.0
15	15.54	0.0	15.54	0.0	0.0	0.0
16	13.59	0.0	13.59	0.0	0.0	0.0
17	11.38	0.0	11.38	0.0	0.0	0.0
18	11.38	0.0	11.38	0.0	0.0	0.0

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VOL CLASS 13 (HS-AW II 8/4)
CLASS NUMBER 13

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.81	0.0	4.81	0.0	0.0	0.0
6	8.99	0.0	8.99	0.0	0.0	0.0
7	8.21	0.0	8.21	0.0	15.18	0.0
8	10.32	0.0	10.32	0.0	0.0	0.0
9	11.71	0.0	11.71	0.0	15.18	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.61	0.0	12.61	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.55	0.0	11.55	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N33, NEW YIELD TABLES,FIR REG 3W
ALT. C. CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, MAR 27,1982.

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CRBE OUTPUT=A

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE: TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	1	2	3	4	5	6	7	8	9	10
A13,R, 2, 4		85.81		80.74*						
2216.000		(25.23)		(27.41)						
A11,R, 2, 4		68.68		76.27*						
3023.000		(22.72)		(25.23)						
A09,R, 2, 4		126.65		145.93*						
8423.000		(19.75)		(22.72)						
A07,R, 2, 4		486.48		586.39*						
30187.158		(16.11)		(19.75)						
A07,R, 7, 8							83.77		99.98*	
2654.848							(24.02)		(28.38)	
A05,R, 7, 8							633.68		714.59*	
29750.000							(21.30)		(24.02)	
A03,R, 7, 8							280.30		307.51*	
14437.000							(19.03)		(21.30)	
A01,R,12,14										
5536.000										
B13,R, 1, 3	200.43		203.78*							
9848.986	(20.36)		(20.69)							
B11,R, 1, 3	217.85		229.61*							
11282.986	(19.29)		(20.35)							
B09,R, 2, 4		168.97		183.02*						
9182.986		(18.40)		(19.93)						
B07,R, 2, 4		89.07		81.57*						
4432.986		(15.88)		(18.40)						
B05,R, 7, 8							49.23		51.93*	
2552.000							(19.29)		(20.35)	
B03,R, 7, 8							42.49		47.88*	

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2472.000													(17.19)				(18.28)	
B01,R, 8,12															2.68			
171.000															(15.58)			
C13,R, 1, 2		126.39				134.28*												
8087.000		(14.16)				(14.81)												
C11,R, 1, 3		69.51				82.05*												
4361.998		(13.56)				(14.16)												
C09,R, 1, 3		23.12				24.24*												
1785.000		(12.95)				(13.58)												
C07,R, 1, 3		58.67				65.32*												
8043.998		(11.62)				(12.95)												
C05,R, 4, 6								11.90				12.63*						
951.000								(12.51)				(13.28)						
C03,R, 7, 9													3.63				4.02*	
296.000													(12.95)				(13.58)	
D13,R, 2, 4				159.87				172.83*										
10449.000				(15.30)				(16.54)										
D11,R, 5, 7										96.00			101.88*					
9980.004										(15.94)			(17.09)					
D11,R, 8, 8												25.25			28.87*			
1529.903												(16.94)			(17.60)			
D09,R, 7, 9													218.43				234.18*	
13703.000													(15.94)				(17.09)	
D07,R, 7, 9													202.27				221.14*	
13873.000													(14.58)				(15.94)	
D05,R, 7, 9													197.90				224.37*	
15388.998													(12.86)				(14.58)	
D03,R, 7, 9													246.85				302.51*	
23823.664													(10.57)				(12.86)	
D02,R, 8,12															41.39			
3504.330															(11.81)			
D01,R, 9,13																	41.19	
3887.000																	(10.57)	
E13,R, 1, 3		419.40				446.87*												
19348.000		(21.68)				(23.10)												
E11,R, 1, 3		134.42				146.45*												
6754.998		(19.90)				(21.68)												
E11,R, 2, 4				181.37				182.77*										
7260.008				(20.85)				(22.42)										
E09,R, 2, 4				350.67				388.71*										

18643.004				(18.81)				(20.65)										
E07,R, 2, 4				281.39				331.65*										
17841.996				(15.85)				(18.61)										
E05,R, 7, 9													220.79				240.56*	
11095.000													(19.90)				(21.68)	
E03,R, 7, 9													211.13				239.61*	
12050.996													(17.52)				(19.90)	
E01,R, 8,12															280.38			
17578.992															(15.95)			
F13,R, 1, 3		239.08				130.85*												95.83
6293.348		(22.10)				(20.75)												(15.18)
F12,R, 1, 5		304.20								255.88*								
13764.848		(22.10)								(18.59)								
F11,R, 1, 5		587.94								527.53*								
25410.992		(22.35)								(20.76)								
F09,R, 2, 5				331.22						333.94*								
15110.416				(21.92)						(22.10)								
F09,R, 3, 5						409.42				404.84*								
18316.988						(22.35)				(22.10)								
F07,R, 3, 5						284.22						302.80*						
13515.062						(21.03)						(22.39)						
F07,R, 4, 6								146.19				149.33*						
8869.308								(21.82)				(22.38)						
F07,R, 5, 7										34.08			33.89*					
1524.624										(22.35)			(22.10)					
F05,R, 5, 7										198.94			211.43*					
9480.000										(21.03)			(22.35)					
F03,A, 6, 8												348.04			421.15*			
19921.996												(17.47)			(21.14)			
F01,A, 8,12															209.36			
17707.992															(17.47)			
G13,R, 1, 3		203.88				186.51*												180.88
10585.000		(19.24)				(17.62)												(15.18)
G11,R, 1, 5		241.99								215.48*								
12227.996		(19.79)								(17.62)								
G09,R, 2, 5				446.97						441.85*								
23964.996				(19.55)						(19.24)								
G07,R, 3, 5						182.61				191.92*								
9897.996						(18.63)				(19.79)								
G07,R, 3, 6						193.44						202.07*						

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10273.023			(18.83)			(18.67)				
G05,R, 4, 6				341.29		380.62*				
19468.992				(17.53)		(19.55)				
G03,A, 6, 8						1278.91		1547.57*		
73206.938						(17.47)		(21.14)		
G01,A, 8,11								57.19		
3273.621								(17.47)		
G01,A, 8,12								12.86		
736.379								(17.47)		
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	135791.75	147544.38	51804.64	27089.30	16944.71	94654.81	141796.31	42972.31	3897.00	16878.35
M CUNITS	2699.45	2699.45	1069.70	499.38	328.02	1852.20	2352.45	703.85	41.19	256.21
HARVEST CUTS										
ACRES	0.0	0.0	84388.25	109469.05	117495.44	50877.38	16944.71	94654.81	141796.31	0.0
M CUNITS	0.0	0.0	1629.75	2300.07	2371.42	1047.25	345.98	1995.60	2958.25	0.0
TOTAL CUTS										
ACRES	135791.75	147544.38	136192.88	136558.31	134440.13	145532.19	158741.00	137627.06	145693.31	16878.35
M CUNITS	2699.45	2699.45	2699.45	2699.45	2699.45	2699.45	2699.45	2699.45	2699.45	256.21

* = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	11	12	13	14	15	16	17	18	19	20
				TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)						
A13,R, 2, 4		41.42		41.42*						
2216.000		(18.69)		(18.69)						
A11,R, 2, 4		56.50		56.50*						
3023.000		(18.69)		(18.69)						
A09,R, 2, 4		120.05		120.05*						
6423.000		(18.69)		(18.69)						
A07,R, 2, 4		564.38		564.38*						
30197.158		(18.69)		(18.69)						
A07,R, 7, 9							49.62		49.62*	
2654.848							(18.69)		(18.69)	
A05,R, 7, 9							556.03		556.03*	
29750.000							(18.69)		(18.69)	
A03,R, 7, 9							269.83		269.83*	
14437.000							(18.69)		(18.69)	
A01,R,12,14		125.82		139.72*						
5538.000		(22.72)		(25.23)						
B13,R, 1, 3	206.93		206.93*							
9848.996	(21.01)		(21.01)							
B11,R, 1, 3	237.06		237.06*							
11282.996	(21.01)		(21.01)							
B09,R, 2, 4		192.93		192.93*						
9182.996		(21.01)		(21.01)						
B07,R, 2, 4		93.14		93.14*						
4432.996		(21.01)		(21.01)						
B05,R, 7, 9							53.62		53.62*	
2552.000							(21.01)		(21.01)	
B03,R, 7, 9							51.94		51.94*	

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2472.000								(21.01)		(21.01)		
B01,R, 8,12		3.41*									3.59	
171.000		(15.93)									(21.01)	
C13,R, 1, 3	190.50		190.50*									
9067.000	(21.01)		(21.01)									
C11,R, 1, 3	92.07		92.07*									
4381.995	(21.01)		(21.01)									
C09,R, 1, 3	37.50		37.50*									
1785.000	(21.01)		(21.01)									
C07,R, 1, 3	105.97		105.97*									
5043.898	(21.01)		(21.01)									
C05,R, 4, 5				19.98		19.98*						
951.000				(21.01)		(21.01)						
C03,R, 7, 9								6.22		6.22*		
296.000								(21.01)		(21.01)		
D13,R, 2, 4			125.60		125.60*							
10448.000			(12.02)		(12.02)							
D11,R, 5, 7						71.84		71.84*				
5960.084						(12.02)		(12.02)				
D11,R, 8, 8								18.35		18.35*		
1526.903								(12.02)		(12.02)		
D09,R, 7, 9									184.71		184.71*	
13703.000									(12.02)		(12.02)	
D07,R, 7, 9									186.75		186.75*	
13873.000									(12.02)		(12.02)	
D05,R, 7, 9									184.98		184.98*	
15388.998									(12.02)		(12.02)	
D03,R, 7, 9									282.75		282.75*	
23523.664									(12.02)		(12.02)	
D03,R, 8,12		53.62*										
3804.330		(15.30)										
D01,R, 5,13			55.82*									
3897.000			(14.58)									
E13,R, 1, 3	356.92		356.92*									
19345.000	(18.45)		(18.45)									
E11,R, 1, 3	124.83		124.83*									
6754.988	(18.45)		(18.45)									
E11,R, 2, 4		133.95		133.95*								
7260.008		(18.45)		(18.45)								
E09,R, 2, 4		343.96		343.96*								

18843.004		(18.45)		(18.45)								
E07,R, 2, 4		325.49		325.49*								
17641.598		(18.45)		(18.45)								
E05,R, 7, 9								204.70		204.70*		
11089.000								(18.45)		(18.45)		
E03,R, 7, 9								222.34		222.34*		
12050.898								(18.45)		(18.45)		
E01,R, 8,12		386.52*									324.33	
17578.992		(20.85)									(18.45)	
F13,R, 1, 3		95.53*								95.53		
6293.348		(15.18)								(15.18)		
F13,R, 1, 5		208.95		208.95*								
13764.848		(15.18)		(15.18)								
F11,R, 1, 5		385.74		385.74*								
25410.992		(15.18)		(15.18)								
F09,R, 2, 5		229.38		229.38*								
15110.415		(15.18)		(15.18)								
F09,R, 3, 5		278.08		278.08*								
18318.586		(15.18)		(15.18)								
F07,R, 3, 8			205.18		205.18*							
13515.083			(15.18)		(15.18)							
F07,R, 4, 8			101.24		101.24*							
6669.309			(15.18)		(15.18)							
F07,R, 5, 7				23.14		23.14*						
1524.624				(15.18)		(15.18)						
F05,R, 5, 7				143.60		143.60*						
9460.000				(15.18)		(15.18)						
F03,A, 8, 8					302.42		302.42*					
19921.996					(15.18)		(15.18)					
F01,A, 8,12		405.69*								258.81		
17707.992		(22.91)								(15.18)		
G13,R, 1, 3		180.68*								180.68		
10585.000		(15.18)								(15.18)		
G11,R, 1, 5		185.62		185.62*								
12227.598		(15.18)		(15.18)								
G09,R, 2, 5		348.61		348.61*								
22964.898		(15.18)		(15.18)								
G07,R, 3, 5		147.22		147.22*								
9687.965		(15.18)		(15.18)								
G07,R, 3, 8			155.94		155.94*							

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10273.023			(15.18)		(15.18)					
G05,R, 4, 6			295.54		295.54*					
19468.982			(15.18)		(15.18)					
G03,A, 6, 8				1111.27		1111.27*				
73205.938				(15.18)		(15.18)				
G01,A, 8,11	72.81*						49.69		49.69*	
3273.621	(22.24)						(15.18)		(15.18)	
G01,A, 8,12		15.87*						11.18		
736.379		(22.91)						(15.18)		
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	67509.94	222053.38	60375.39	11935.62	83127.88	5980.09	78834.69	89782.19	35222.72	17748.98
M CUNITS	1351.97	3761.23	883.48	188.73	1413.88	71.84	1432.84	848.89	836.20	327.92
HARVEST CUTS										
ACRES	3273.62	58577.04	71408.94	222053.38	60375.39	11935.62	83127.88	5980.09	78834.69	89782.19
M CUNITS	72.81	1102.32	1408.39	3795.13	883.48	188.73	1413.88	71.84	1432.84	848.89
TOTAL CUTS										
ACRES	70783.50	280630.38	131782.31	233988.84	143503.25	17895.71	161962.56	75722.28	112157.36	87512.13
M CUNITS	1424.37	4863.55	2291.87	3981.86	2297.16	258.37	2846.33	920.53	1968.84	1176.81

\+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	21	22	23	24	25	26	27	28	29	30
A13,R, 2, 4		41.42		41.42*						
2216.000		(18.69)		(18.69)						
A11,R, 2, 4		58.50		58.50*						
3023.000		(18.69)		(18.69)						
A08,R, 2, 4		120.05		120.05*						
8423.000		(18.69)		(18.69)						
A07,R, 2, 4		564.38		564.38*						
30187.156		(18.69)		(18.69)						
A07,R, 7, 9										
2854.848										
A05,R, 7, 9										
29750.000										
A03,R, 7, 9										
14437.000										
A01,R,12,14		103.51		103.51*						
5536.000		(18.69)		(18.69)						
B13,R, 1, 3	206.93		206.93*							
9848.986	(21.01)		(21.01)							
B11,R, 1, 3	237.06		237.06*							
11282.986	(21.01)		(21.01)							
B09,R, 2, 4		192.93		192.93*						
9182.986		(21.01)		(21.01)						
B07,R, 2, 4		93.14		93.14*						
4432.986		(21.01)		(21.01)						
B05,R, 7, 9										
2552.000										
B03,R, 7, 9										

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2472.000				
B01,R, 8,12		3.58*		
171.000		(21.01)		
C13,R, 1, 3	190.50		190.50*	
9067.000	(21.01)		(21.01)	
C11,R, 1, 3	92.07		92.07*	
4381.996	(21.01)		(21.01)	
C09,R, 1, 3	37.50		37.50*	
1785.000	(21.01)		(21.01)	
C07,R, 1, 3	105.97		105.97*	
5043.996	(21.01)		(21.01)	
C05,R, 4, 5				19.98
951.000				(21.01)
C03,R, 7, 9				
298.000				
D13,R, 2, 4				125.80
10449.000				(12.02)
D11,R, 5, 7				
5960.094				
D11,R, 8, 8				
1526.903				
D09,R, 7, 9				
13703.000				
D07,R, 7, 9				
13873.000				
D05,R, 7, 9				
15368.996				
D03,R, 7, 9				
23823.884				
D03,R, 8,12	42.12		42.12*	
3504.330	(12.02)		(12.02)	
D01,R, 9,13		46.84		46.84*
3897.000		(12.02)		(12.02)
E13,R, 1, 3	355.92		355.92*	
19345.000	(18.45)		(18.45)	
E11,R, 1, 3	124.63		124.63*	
6764.988	(18.45)		(18.45)	
E11,R, 2, 4		133.95		133.95*
7260.008		(18.45)		(18.45)
E09,R, 2, 4		343.96		343.96*

18643.004		(18.45)		(18.45)
E07,R, 2, 4		325.49		325.49*
17841.996		(18.45)		(18.45)
E05,R, 7, 8				
11095.000				
E03,R, 7, 9				
12050.996				
E01,R, 8,12		324.33*		
17574.992		(18.45)		
F13,R, 1, 3	95.53*			
5293.348	(15.18)			
F13,R, 1, 5	208.95		208.95*	
13764.648	(15.18)		(15.18)	
F11,R, 1, 5	385.74		385.74*	
25410.992	(15.18)		(15.18)	
F09,R, 2, 5	229.38		229.38*	
15110.418	(15.18)		(15.18)	
F09,R, 3, 5	276.08		276.08*	
18318.586	(15.18)		(15.18)	
F07,R, 3, 6		205.18		205.18*
13515.063		(15.18)		(15.18)
F07,R, 4, 6		101.24		101.24*
6669.309		(15.18)		(15.18)
F07,R, 5, 7			23.14	
1524.824			(15.18)	
F05,R, 5, 7			143.80	
9480.000			(15.18)	
F03,A, 6, 6				302.42
19921.996				(15.18)
F01,A, 8,12	288.81*			
17707.992	(15.18)			
G13,R, 1, 3	180.68*			
10585.000	(15.18)			
G11,R, 1, 5	185.62		185.62*	
12227.996	(15.18)		(15.18)	
G09,R, 2, 5	348.61		348.61*	
22964.996	(15.18)		(15.18)	
G07,R, 3, 5	147.22		147.22*	
9697.996	(15.18)		(15.18)	
G07,R, 3, 6		155.94		155.94*

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10273.023		(15.18)		(15.18)						
G05,R, 4, 6		295.54		295.54*						
19466.992		(15.18)		(15.18)						
G03,A, 6, 8				1111.27						
73205.938				(15.18)						
G01,A, 8,11										
3273.821										
G01,A, 8,12	11.18*									
736.379	(15.18)									
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	188509.56	156381.31	10984.62	104627.68	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	3177.27	2780.05	165.75	1859.25	0.0	0.0	0.0	0.0	0.0	0.0
HARVEST CUTS										
ACRES	35322.72	17748.99	188509.56	156381.31	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	538.20	327.92	3177.27	2780.05	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CUTS										
ACRES	223832.28	174131.25	199494.13	262909.19	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	3715.47	3107.98	3344.02	4638.31	0.0	0.0	0.0	0.0	0.0	0.0

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

HCFI TIMBER RAM ANALYSIS

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 5
TOTAL OBJECTIVE VALUE = 24294.93 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,R, 2, 4	2218.00	116.65	52.64
A11,R, 2, 4	3023.00	144.95	47.95
A09,R, 2, 4	6423.00	272.78	42.47
A07,R, 2, 4	30197.16	1082.87	35.86
A07,R, 7, 9	2654.85	133.72	50.37
A05,R, 7, 9	29750.00	1348.27	45.32
A03,R, 7, 9	14437.00	567.81	39.33
A01,R,13,14	5536.00	0.0	0.0
B13,R, 1, 3	9848.00	404.20	41.04
B11,R, 1, 3	11283.00	447.28	39.64
B09,R, 2, 4	9183.00	351.88	38.33
B07,R, 2, 4	4433.00	150.63	33.98
B05,R, 7, 9	2562.00	101.15	39.64
B03,R, 7, 9	2472.00	90.18	36.48
B01,R, 8,12	171.00	2.86	16.58
C13,R, 1, 3	9067.00	252.87	24.97
C11,R, 1, 3	4382.00	121.58	27.74
C09,R, 1, 3	1785.00	47.38	26.53
C07,R, 1, 3	5044.00	124.98	24.78
C05,R, 4, 6	951.00	24.53	25.79
C03,R, 7, 9	295.00	7.85	26.53
D13,R, 2, 4	10449.00	332.70	31.84
D11,R, 5, 7	5950.09	196.86	33.03
D11,R, 8, 8	1526.90	52.13	34.14
D09,R, 7, 9	13703.00	452.81	33.03
D07,R, 7, 9	13673.00	423.40	30.92
D05,R, 7, 9	15389.00	422.27	27.44
D03,R, 7, 9	23623.86	551.18	23.43
D03,R, 8,12	3804.33	41.39	11.81
D01,R, 9,13	3897.00	41.19	10.57
E13,R, 1, 3	19345.00	856.27	44.28
E11,R, 1, 3	6754.89	280.87	41.58
E11,R, 2, 4	7260.01	314.14	43.27
E09,R, 2, 4	18843.00	739.38	39.66
E07,R, 2, 4	17842.00	613.24	34.76
E05,R, 7, 9	11095.00	461.33	41.58
E03,R, 7, 9	12051.00	450.95	37.42
E01,R, 8,12	17578.99	280.38	15.95
F13,R, 1, 3	8293.35	358.73	42.86
F13,R, 1, 5	13784.65	560.08	40.69
F11,R, 1, 5	25410.95	1095.47	43.11
F09,R, 2, 5	15110.42	665.16	44.02

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F08,R, 3, 5	18316.59	414.26	44.45
F07,R, 3, 6	13515.08	586.62	43.42
F07,R, 4, 6	6689.31	295.62	44.31
F07,R, 5, 7	1524.62	67.77	44.45
F05,R, 5, 7	9480.00	410.37	43.38
F03,A, 6, 8	19922.00	768.19	38.61
F01,A, 8,12	17707.99	309.36	17.47
G13,R, 1, 3	10585.00	390.16	36.86
G11,R, 1, 5	12228.00	457.48	37.41
G09,R, 2, 5	22985.00	890.81	38.76
G07,R, 3, 5	9887.86	374.54	38.62
G07,R, 3, 6	10273.02	395.51	38.50
G05,R, 4, 6	19488.99	721.91	37.08
G03,A, 6, 8	73205.94	2826.46	38.61
G01,A, 8,11	3273.62	57.19	17.47
G01,A, 8,12	736.38	12.88	17.47

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8
TOTAL OBJECTIVE VALUE = 24294.93 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2284.67 M CUNITS/DECADE

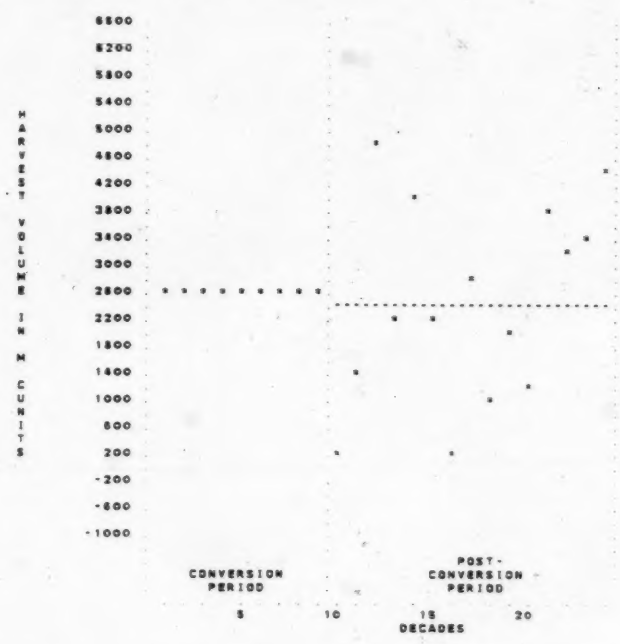
AVERAGE OF POST-CONVERSION PERIODIC HARVESTS= 2454.04 M CUNITS/DECADE

HARVEST REPORT

PERIOD	OVERSTORY REMOVAL CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	INTERMEDIATE CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	HARVEST CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	TOTAL CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	135792.	2699.45	2699.45	0.	0.0	0.0	135792.	2699.45	2699.45
2	0.	0.0	0.0	147544.	2699.45	5398.89	0.	0.0	0.0	147544.	2699.45	5398.89
3	0.	0.0	0.0	51605.	1089.70	6488.59	84388.	1829.75	1829.75	135193.	2699.45	8088.34
4	0.	0.0	0.0	27089.	499.38	6987.96	109489.	2200.07	3829.82	136586.	2699.45	10787.78
5	0.	0.0	0.0	18845.	328.02	7295.98	117495.	2371.42	6201.24	134440.	2699.45	13487.23
6	0.	0.0	0.0	94855.	1652.20	8948.18	50677.	1047.25	7248.48	145532.	2699.45	16186.67
7	0.	0.0	0.0	141796.	2352.46	11300.64	18845.	346.88	7595.48	158741.	2699.45	18886.12
8	0.	0.0	0.0	42972.	703.85	12004.49	94855.	1895.60	9491.08	137827.	2599.45	21585.56
9	0.	0.0	0.0	3897.	41.19	12045.68	141796.	2658.25	12249.31	145693.	2699.45	24285.01
10	0.	0.0	0.0	15878.	256.21	12301.89	0.	0.0	12249.31	15878.	256.21	24541.22
11	0.	0.0	0.0	67510.	1351.57	13653.46	3274.	72.81	12322.12	70784.	1424.37	25965.59
12	0.	0.0	0.0	222053.	3781.23	17434.68	58577.	1102.32	13424.43	278630.	4883.55	30849.14
13	0.	0.0	0.0	60375.	883.48	18318.16	71407.	1404.38	14832.82	131782.	2291.87	33141.00
14	0.	0.0	0.0	11936.	186.73	18504.89	222053.	3795.13	18627.95	233988.	3981.86	37122.86
15	0.	0.0	0.0	93128.	1413.68	19918.57	60375.	883.48	19511.42	153503.	2297.16	39430.02
16	0.	0.0	0.0	5960.	71.64	19990.20	11936.	186.73	19698.15	17896.	258.37	39688.38
17	0.	0.0	0.0	76835.	1432.64	21422.84	93128.	1413.68	21111.83	169963.	2846.33	42534.71
18	0.	0.0	0.0	69762.	848.89	22271.73	5960.	71.64	21183.46	75722.	920.53	43455.23
19	0.	0.0	0.0	35323.	536.20	22807.93	76835.	1432.64	22616.11	112157.	1968.84	45424.07
20	0.	0.0	0.0	17750.	327.92	23135.85	69762.	848.89	23464.99	87512.	1176.81	46600.88
21	0.	0.0	0.0	188510.	3177.27	26313.12	35323.	936.20	24001.19	223832.	3713.47	50314.35
22	0.	0.0	0.0	158381.	2780.05	29093.17	17750.	327.92	24329.11	176131.	3107.98	53422.32
23	0.	0.0	0.0	10985.	166.78	29259.91	188510.	3177.27	27506.38	199494.	3344.02	56766.34
24	0.	0.0	0.0	104528.	1559.26	30819.17	158381.	2780.05	30286.43	262909.	4339.31	61105.65

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 200 M CUNITS
------ = PERIOD AVERAGE

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15. Appendix 3: Methodologies of Genetic Assimilation and Printouts

The data required to assimilate genetic improvement of pine stands, and stands receiving similar improvement schedules to pine stands differs from the data required for the spruce stands, and stands with similar schedules to spruce, because of the 10 year implementation delay assumed for the spruce tree improvement program. Therefore, the data production methods for the two major stand catagories will be discussed separately. The data production methods described for lodgepole pine stands apply also to the white spruce –lodgepole pine stands and the black spruce – lodgepole pine stands. The methodologies described for the white spruce stands apply also to the fir – conifer mix stands, the hardwood – softwood stands, and the softwood – hardwood stands.

Improvement to Pine Stands

The assimilation of genetic improvement into the lodgepole pine stands (A01 to A13 in the data) required the construction of another volume class (Volume class 9) in addition to the original volume class no. 1. Both volume classes required entries in the "normal cuts" and "improved cuts" portions of the regenerated timber yield data.

Management alternatives G and I allow volumes to be assigned from volume classes 1 and 9, respectively. Alternative G is used for initial cuts occurring in decades 1 and 2, and alternative I is used for initial cuts occurring in decades 3, 4, and 5. Since stand A13 is 130 years old, all initial cuts must occur before decade 5, in accordance with AFS policy.[25] Refer to Table A.16 for a summary of management alternatives for Stand A13.

The management alternative 'G' for 130 year old lodgepole pine, volume class 1, were defined as follows:

1. Period of improved sustained yield – (i.e. the first planning period where the genetically improved stock will be available for planting after harvest) – period 4
2. First entry – period 1
3. Last entry – period 2
4. First harvest – period 3
5. Last harvest – period 5
6. Minimum number of cuts – 3
7. Maximum number of cuts – 5

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[25]See 4.4 – Management Alternatives

This was a very strict schedule. However, it adequately allowed the simulation of the improvement schedule for lodgepole pine. Note that the first entry and the first harvest both occur before the period of improved sustained yield, and therefore, the regenerated timber yields are both taken from the "normal cuts" portion of the yield data. In this portion, the initial "partial cut" into the regenerated timber has a volume of 18.69 cunits / acre representing no improvement over the normal volume, similar to the pine improvement schedule for trees planted in decade 1. The final harvest of the regenerated timber, 2 decades later, has an improved volume of 22.05 cunits / acre, representing an increase of 18%, similar to the improved schedule for trees planted in decade 3.

The last entry allowed in this schedule of management alternatives for A13 occurs in decade 2. Since the corresponding final harvest occurs in decade 4, the program is now able to regenerate timber according to the "improved cuts" portion of the regenerated yield data. The first "partial cut" of the regenerated timber will yield 20.55 cunits / acre, representing an increase of 10% over the normal volume, similar to the improvement appropriated for decade 2. The final harvest (or the harvest of the reserve strips) will yield a volume of 24.29 cunits / acre, or a 30% increase over the normal volumes, similar to the increase demanded for trees planted in decade 4 of the lodgepole pine improvement schedule.

The management alternative 'I' for 130 year old lodgepole pine stands, volume class 9, were defined as follows:

1. Period of improved sustained yield – 6
2. First entry – period 3
3. Last entry – period 4
4. First harvest – period 5
5. Last harvest – period 6
6. Minimum number of cuts – 3
7. Maximum number of cuts – 5

If some or all of the 130 year old pine is not harvested for the first time until decade 3, Timber RAM would choose this management alternative. If the first entry is made in decade 3, the first harvest would not be allowed until decade 5. Since the period of improved sustained yield does not occur until decade 6, Timber RAM would be forced

to assign yields from the "normal cuts" category of the regenerated yield class. The regenerated harvest cut under this catagory in volume class 9 is 24.29 cunits / acre – a 30% increase over normal volumes, in compliance with the improvement schedule for lodgepole pine stands planted in decade 5. The "partial cut", two decades preceding the harvest, would yield 22.05 cunits / acre, giving an 18% increase in volume over normal stands, as called for by the schedule in decade 3.

The constraint which specifies that no timber is to be harvested over the age of 180 years causes the final harvest to be set at decade 6. The corresponding initial harvest at decade 4 would allow Timber RAM to select yields from the "improved cuts" portion of the regenerated timber would yield 24.29 cunits / acre, representing 30% volume increases due to genetic improvement, in accordance with the lodgepole pine stand improvement schedule for trees planted in decades 4 and 6.

Table A.16: Management Alternatives for Genetic Improvement of 130 Year Old Lodgepole Pine – Stand A13[26]

Man. Alt.	Vol. Class	Per. Imp. Sus. Yld.	First Entry	Last Entry	First Harvest	Last Harvest
G	1	4	1	2	3	4
I	9	6	3	4	5	6

The pattern was followed for all stands of lodgepole pine. Each stand, except A01 and A03, was given two management alternatives – G and I, whereby volumes would be assigned from Volume class 1 or Volume class 9. Stands A01 and A03, because of their young ages, would only be allowed alternative I because initial harvest is not allowed before decade 5 for 30 year old stands.

Improvement of White Spruce Stands

The technique used for assimilating genetic improvement of white spruce into the harvest schedule is similar to that used for lodgepole pine stands, described above. However, the 10 year old delay in the implementation of the program forced the construction of a third volume class, and required three management alternatives for each

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[26]Run N34I, Appendix 3

stand.

The pattern is demonstrated by the management alternatives for 110 year old pure white spruce stands (B11). The three alternatives for the stand, (G, I, and T), allow volumes to be assigned from volume classes 2, 10, and 11, respectively. Alternative G is used for initial cuts occuring in decades 1 and 2; I is used for initial cuts occuring in decades 3 and 4, and T is used for initial cuts occuring in decades 5 and 6. Table A.17 shows the management alternatives for stand B11.

If the initial cut (or the "partial cut") were to occur in decade 1, the corresponding final harvest would not occur until decade 3. The period of improved sustained yield is decade 4, so the yields would be assigned from the "normal cuts" section of volume class 2. The "normal cuts" show volume increases of 0 and 10% in compliance with the improvement schedule for white spruce stands for trees planted in the first and third decades.

Table A.17: Management Alternatives for Genetic Improvement of White spruce stands – Stand B11[27]

Man. Alt.	Vol. Class	Per. Imp. Sus. Yld.	First Entry	Last Entry	First Harvest	Last Harvest
G	2	4	1	2	3	5
I	10	6	3	4	5	6
T	11	-1	5	6	7	8

An initial cut in decade 2 would result in a harvest at decade 4, thereby allowing yields to be assigned from the improved yield table of volume class 2. The volumes in this table represent increases of 0 and 18%, as per the white spruce improvement schedule for trees planted in decades 2 and 4.

Management alternative I would be chosen by Timber RAM for the portion of the stand which might be initially cut in decades 3 or 4, and harvested in decades 5 or 6. Under this management alternative, the stand would be assigned to Volume class 10, which provides for increases of 10% and 30% for regenerated "normal cuts", and 18% and 30%

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[27]Run N34I, Appendix 3

for regenerated "improved cuts", which are activated in decade 6.

Management alternative T would be chosen if the first entry for B11 was not made until decade 5. In this case, genetically improved stock would be planted after the first entry cut and all subsequent cuts, so that there is no need for either an "improved cut" portion, or a period of improved sustained yield. All regenerated cuts would represent 30% volume increases over the normal yields.

This pattern was followed for all ages of white spruce stands. Stand B13 (for 13 decade old spruce) did not require a third management alternative T because all of its timber is assumed to be harvested before the seventh decade, and therefore before management alternative T would apply. Stand B05 did not require management alternative G, because the first entry cut is not allowed before decade 3. Stands B03 and B01 did not require managment alternative I for the same age constraint reasons.

1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN N341, ALL GENETIC IMP.,FIR REG WS
ALT. C. CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, MAR 28,1982.

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2800.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 9
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 18

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER BOUNDS ONLY

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

(NOTE' UPPER CONSTRAINTS ARE IGNORED IN THE 'LOWER BOUNDS ONLY' OPTION)

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.100
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAS*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE' IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED'

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	9	24		

NOTE' IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5. TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	2.218	1.00				
A11		11	L	3.023	1.00				
A09		9	L	6.423	1.00				
A07		7	L	32.852	1.00				
A05		5	L	28.790	1.00				
A03		3	L	14.437	1.00				
A01		1	L	5.538	1.00				
B13		13	L	9.648	1.00				
B11		11	L	11.283	1.00				
B09		9	L	9.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.552	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	8.067	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.788	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.951	1.00				
C03		3	L	0.298	1.00				
D13		13	L	10.449	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.873	1.00				
D05		5	L	15.389	1.00				
D03		3	L	27.028	1.00				
D01		1	L	3.897	1.00				
E13		13	L	18.345	1.00				
E11		11	L	14.015	1.00				
E09		9	L	18.843	1.00				
E07		7	L	17.642	1.00				
E05		5	L	11.095	1.00				
E03		3	L	12.051	1.00				
E01		1	L	17.579	1.00				
F13		13	L	20.058	1.00				
F11		11	L	25.411	1.00				
F09		9	L	33.429	1.00				
F07		7	L	21.709	1.00				
F05		5	L	9.480	1.00				
F03		3	L	15.922	1.00				
F01		1	L	17.706	1.00				
G13		13	L	10.585	1.00				
G11		11	L	12.228	1.00				
G09		9	L	22.965	1.00				
G07		7	L	19.971	1.00				
G05		5	L	15.489	1.00				
G03		3	L	73.205	1.00				
G01		1	L	4.010	1.00				

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 588.031 THOUSAND ACRES

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5. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT REC	CODES NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF SUSTAINED	IMP YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	G		1	0	4		1	1	2	3	5	3	5
A12	I		9	0	5		1	3	4	5	5	3	5
A11	G		1	0	4		1	1	2	3	5	3	5
A11	I		9	0	5		1	3	5	5	5	3	5
A09	G		1	0	4		1	1	2	3	5	3	5
A09	I		9	0	5		1	3	8	5	10	3	5
A07	G		1	0	4		1	1	2	3	5	3	5
A07	I		9	0	5		1	3	10	5	12	3	5
A05	I		9	0	5		1	3	12	5	14	3	5
A03	I		9	0	5		1	5	14	7	16	3	5
A01	I		9	0	5		1	7	16	9	18	3	5
B13	G		2	0	4		1	1	2	3	5	3	5
B13	I		10	0	5		1	3	4	5	5	3	5
B11	G		2	0	4		1	1	2	3	5	3	5
B11	I		10	0	5		1	3	4	5	6	3	3
B11	T		11	0	-1		1	5	6	7	8	3	5
B09	G		2	0	4		1	1	2	3	5	3	5
B09	I		10	0	5		1	3	4	5	8	3	3
B09	T		11	0	-1		1	5	8	7	10	3	5
B07	G		2	0	4		1	1	2	3	5	3	5
B07	I		10	0	5		1	3	4	5	8	3	3
B07	T		11	0	-1		1	5	10	7	12	3	5
B05	I		10	0	5		1	3	4	5	8	3	3
B05	T		11	0	-1		1	5	12	7	14	3	5
B03	T		11	0	-1		1	5	14	7	16	3	5
B01	T		11	0	-1		1	7	16	9	18	3	5
C13	G		3	0	4		1	1	2	3	5	3	5
C13	I		12	0	5		1	3	4	5	6	3	5
C11	G		3	0	4		1	1	2	3	5	3	5
C11	I		12	0	5		1	3	4	5	6	3	3
C11	T		13	0	-1		1	5	6	7	8	3	5
C09	G		3	0	4		1	1	2	3	5	3	5
C09	I		12	0	5		1	3	4	5	6	3	3
C09	T		13	0	-1		1	5	8	7	10	3	5
C07	G		3	0	4		1	1	2	3	5	3	5
C07	I		12	0	5		1	3	4	5	6	3	3
C07	T		13	0	-1		1	5	10	7	12	3	5
C05	I		12	0	5		1	3	4	5	8	3	3
C05	T		13	0	-1		1	5	12	7	14	3	5
C03	I		12	0	5		1	5	14	7	16	3	5
D13	G		4	0	4		1	1	2	3	5	3	5
D13	I		14	0	5		1	3	4	5	6	3	5
D11	G		4	0	4		1	1	2	3	5	3	5
D11	I		14	0	5		1	3	6	5	8	3	5
D09	G		4	0	4		1	1	2	3	5	3	5
D09	I		14	0	5		1	3	8	5	10	3	5
D07	G		4	0	4		1	1	2	3	5	3	5
D07	I		14	0	5		1	3	10	5	12	3	5
D05	I		14	0	5		1	3	12	5	14	3	5
D03	I		4	0	5		1	5	14	7	16	3	5
D01	I		14	0	5		1	7	16	9	18	3	5
E13	G		5	0	4		1	1	2	3	5	3	5
E12	I		15	0	5		1	3	4	5	6	3	5
E11	G		5	0	4		1	1	2	3	5	3	5
E11	I		15	0	5		1	3	6	5	8	3	5
E09	G		5	0	4		1	1	2	3	5	3	5
E09	I		15	0	5		1	3	8	5	10	3	5
E07	G		5	0	4		1	1	2	3	5	3	5
E07	I		15	0	5		1	3	10	5	12	3	5
E05	I		15	0	5		1	3	12	5	14	3	5
E03	I		5	0	5		1	5	14	7	16	3	5
E01	I		15	0	5		1	7	16	9	18	3	5
F13	G		7	0	4		1	1	2	3	5	3	5
F13	I		19	0	5		1	3	4	5	6	3	5
F11	G		7	0	4		1	1	2	3	5	3	5
F11	I		19	0	5		1	3	4	5	6	3	3
F11	T		20	0	-1		1	5	6	7	8	3	5
F09	G		7	0	4		1	1	2	3	5	3	5
F09	I		19	0	5		1	3	4	5	6	3	3
F09	T		20	0	-1		1	5	8	7	10	3	5
F07	G		7	0	4		1	1	2	3	5	3	5
F07	I		19	0	5		1	3	4	5	8	3	3
F07	T		20	0	-1		1	5	10	7	12	3	5
F05	I		19	0	5		1	3	4	5	8	3	3
F05	T		20	0	-1		1	5	12	7	14	3	5
F03	T		18	0	-1		1	5	14	7	18	3	5
F01	T		18	0	-1		1	7	16	9	18	3	5
G13	G		8	0	4		1	1	2	3	5	3	5
G12	I		19	0	5		1	3	4	5	8	3	5
G11	G		8	0	4		1	1	2	3	5	3	5
G11	I		19	0	5		1	3	4	5	6	3	3
G11	T		17	0	-1		1	5	6	7	8	3	5
G09	G		8	0	4		1	1	2	3	5	3	5
G09	I		19	0	5		1	3	4	5	6	3	3
G09	T		17	0	-1		1	5	8	7	10	3	5
G07	G		8	0	4		1	1	2	3	5	3	5
G07	I		19	0	5		1	3	4	5	6	3	3
G07	T		17	0	-1		1	5	10	7	12	3	5
G05	I		19	0	5		1	3	4	5	8	3	3
G05	T		17	0	-1		1	5	12	7	14	3	5
G03	T		18	0	-1		1	5	14	7	16	3	5
G01	T		18	0	-1		1	7	16	9	18	3	5

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7. VOLUME DATA

VOL CLASS 1 (PINE 6/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	18.89	20.55
9	18.03	0.0	18.03	0.0	0.0	0.0
10	18.75	0.0	18.75	0.0	22.06	24.29
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 2 (WHITE SPRUCE 6/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.26	0.0	5.26	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	0.0	0.0
8	15.56	0.0	15.56	0.0	21.01	21.01
9	17.19	0.0	17.19	0.0	0.0	0.0
10	18.40	0.0	18.40	0.0	23.11	24.78
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

University of Alberta

VOL CLASS 3 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.84	0.0	10.84	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	0.0	0.0
8	12.51	0.0	12.51	0.0	21.01	21.01
9	12.95	0.0	12.95	0.0	0.0	0.0
10	13.28	0.0	13.28	0.0	23.11	24.78
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.16	0.0	14.16	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 11

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.02	12.82
10	11.61	0.0	11.61	0.0	0.0	0.0
11	12.46	0.0	12.46	0.0	13.10	13.82
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

University of Alberta

VOL CLASS 5 (SW-PL 5/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.06	0.0	11.06	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	0.0	0.0
8	15.95	0.0	15.95	0.0	15.45	20.30
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	21.77	23.99
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 5 (HS 5/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 5

IMPROVED ROTATION AGE - 5

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.81	0.0	4.81	0.0	0.0	0.0
6	8.99	0.0	8.99	0.0	0.0	0.0
7	8.21	0.0	8.21	0.0	15.18	15.18
8	9.06	0.0	9.06	0.0	0.0	0.0
9	9.75	0.0	9.75	0.0	15.70	17.91
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.75	0.0	10.75	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

University of Alberta

VOL CLASS 7 (SH 8/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	0.0	0.0
7	13.30	0.0	13.30	0.0	15.18	15.18
8	14.89	0.0	[illegible]	0.0	0.0	0.0
9	15.80	0.0	[illegible]	0.0	18.70	17.81
10	15.11	0.0	[illegible]	0.0	0.0	0.0
11	18.29	0.0	[illegible]	0.0	0.0	0.0
12	15.19	0.0	[illegible]	0.0	0.0	0.0
13	15.85	0.0	[illegible]	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.80	0.0	14.80	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.81	0.0	11.81	0.0	0.0	0.0

VOL CLASS 8 (MW 8/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.84	0.0	7.84	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	0.0	0.0
7	12.62	0.0	12.62	0.0	15.70	17.81
8	13.86	0.0	13.86	0.0	0.0	0.0
9	14.81	0.0	14.81	0.0	19.73	19.73
10	15.52	0.0	15.52	0.0	0.0	0.0
11	16.08	0.0	16.08	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.99	0.0	16.99	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.25	0.0	17.25	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

University of Alberta

VOL CLASS 9 (PINE 6/4)
CLASS NUMBER 9

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	22.08	24.28
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	24.28	24.28
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 10 (WHITE SPRUCE 6/4)
CLASS NUMBER 10

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.26	0.0	5.26	0.0	0.0	0.0
6	10.80	0.0	10.80	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	0.0	0.0
8	15.56	0.0	15.56	0.0	23.11	24.75
9	17.18	0.0	17.18	0.0	0.0	0.0
10	18.40	0.0	18.40	0.0	27.31	27.31
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.83	0.0	19.83	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

University of Alberta

VOL CLASS 11 (WHITE SPRUCE 6/4)
CLASS NUMBER 11

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.26	0.0	8.26	0.0	0.0	0.0
6	10.80	0.0	10.80	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	0.0	0.0
8	15.58	0.0	15.58	0.0	27.31	0.0
9	17.19	0.0	17.19	0.0	0.0	0.0
10	18.40	0.0	18.40	0.0	27.31	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.38	0.0	20.38	0.0	0.0	0.0
14	20.80	0.0	20.80	0.0	0.0	0.0
15	20.89	0.0	20.89	0.0	0.0	0.0
16	20.85	0.0	20.85	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VOL CLASS 12 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 12

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.26	0.0	7.26	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	0.0	0.0
8	12.51	0.0	12.51	0.0	23.11	24.78
9	12.95	0.0	12.95	0.0	0.0	0.0
10	13.26	0.0	13.26	0.0	27.31	27.31
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.16	0.0	14.16	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

University of Alberta

VOL CLASS 13 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 13

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.25	0.0	7.25	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.63	0.0	11.63	0.0	0.0	0.0
8	12.51	0.0	12.51	0.0	27.31	0.0
9	12.95	0.0	12.95	0.0	0.0	0.0
10	13.26	0.0	13.26	0.0	27.31	0.0
11	13.56	0.0	13.56	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.16	0.0	14.16	0.0	0.0	0.0
14	14.46	0.0	14.46	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

VOL CLASS 14 (BLACK SPRUCE 6/4)
CLASS NUMBER 14

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 11

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.03	0.0	7.03	0.0	0.0	0.0
8	8.04	0.0	8.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	13.10	13.82
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.85	0.0	12.85	0.0	13.82	13.82
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

University of Alberta

VOL CLASS 15 (SW-PL 8/4)
CLASS NUMBER 15

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 10

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	0.0	0.0
8	15.95	0.0	15.95	0.0	21.77	23.99
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	23.99	23.99
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 16 (HS 6/4)
CLASS NUMBER 16

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	0.0	0.0
7	8.21	0.0	8.21	0.0	16.70	17.91
8	9.08	0.0	9.08	0.0	0.0	0.0
9	9.75	0.0	9.75	0.0	19.73	19.73
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.75	0.0	10.75	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

University of Alberta

VOL CLASS 17 (HS 6/4)
CLASS NUMBER 17

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.99	0.0	8.99	0.0	0.0	0.0
7	8.21	0.0	8.21	0.0	19.73	0.0
8	9.08	0.0	9.08	0.0	0.0	0.0
9	9.75	0.0	9.75	0.0	19.73	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.78	0.0	10.78	0.0	0.0	0.0
12	11.18	0.0	11.18	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 18 (MW 6/4)
CLASS NUMBER 18

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.94	0.0	7.94	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	0.0	0.0
7	12.62	0.0	12.62	0.0	19.73	0.0
8	13.84	0.0	13.84	0.0	0.0	0.0
9	14.81	0.0	14.81	0.0	19.73	0.0
10	15.52	0.0	15.52	0.0	0.0	0.0
11	16.06	0.0	16.06	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.98	0.0	16.98	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.25	0.0	17.25	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

University of Alberta

VOL CLASS 19 (SH 6/4)
CLASS NUMBER 19

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	0.0	0.0
7	13.30	0.0	13.30	0.0	16.70	17.91
8	14.69	0.0	14.69	0.0	0.0	0.0
9	15.60	0.0	15.60	0.0	19.73	19.73
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

VOL CLASS 20 (SH 6/4)
CLASS NUMBER 20

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	0.0	0.0
7	13.30	0.0	13.30	0.0	16.73	0.0
8	14.69	0.0	14.69	0.0	0.0	0.0
9	15.60	0.0	15.60	0.0	19.73	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END
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                    DATA INPUT

                1.  TIMBER RAM PLAN TITLE

                NCFI TIMBER RAM ANALYSIS
*****************************************

            2.  OBJECTIVE FUNCTION = TVLO3

                3.  INPUT DATA SOURCES
          REPORT TAPE=3      LP SOLUTION TAPE=2

                ***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N34I, ALL GENETIC IMP ,FIR REG WS
ALT. C. CUT. REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, MAR 28,1982

        GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

                ***********************

                4.  OUTPUT CONTROL CARD

              NUMBER OF PRINTED COPIES =  1
              CRBE OUTPUT=R

          5.  NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

                                LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE              24
PROBLEM SCHEDULE                     -1
HARVEST REPORT                       24
ECONOMIC REPORT                      -1
HARVEST GRAPH                        24
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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	1	2	3	4	5	6	7	8	9	10
A13,G, 2, 4 2218.000		55.91 (25.23)		80.74* (27.41)						
A11,G, 2, 5 3023.000		68.68 (22.72)			79.66* (26.35)					
A09,G, 2, 6 8423.000		128.85 (19.78)			184.28* (24.02)					
A07,I, 5, 7 4360.986					92.88 (21.30)		104.78* (24.02)			
A07,I, 5, 8 28491.043					606.85 (21.30)			718.83* (25.23)		
A05,I, 6, 8 10804.880						207.47 (19.78)		236.67* (22.72)		
A05,I, 6, 9 19248.344						380.10 (19.78)			482.27* (24.02)	
A03,I, 7, 9 14437.000							280.30 (18.03)		307.91* (21.30)	
A01,I, 7, 8 5838.000							77.20 (13.94)		99.45* (18.03)	
B13,G, 1, 3 9848.986	200.43 (20.35)		203.78* (20.69)							
B11,G, 1, 3 11282.986	217.85 (19.29)		229.51* (20.35)							
B09,G, 2, 4 9182.986		165.97 (18.40)		183.02* (19.93)						
B07,I, 3, 5 4432.986			76.20 (17.19)		85.51* (19.29)					
B05,I, 5, 7 2852.000					43.87 (17.19)		49.23* (19.29)			
B03,I, 7, 8 2472.000							82.49 (17.19)		47.68* (19.29)	
B01,I, 7, 8 171.000							2.30 (13.43)		2.94* (17.19)	
C13,G, 1, 3 8887.000	128.39 (14.16)		134.28* (14.81)							
C11,G, 1, 3 4381.986	59.51 (13.58)		82.08* (14.18)							
C09,G, 1, 3 1785.000	23.12 (12.95)		24.24* (13.58)							
C07,G, 2, 4 8043.986		63.10 (12.51)		66.98* (13.28)						
C05,I, 3, 5 951.000			11.25 (11.83)		12.32* (12.95)					
C03,I, 5, 7 286.000					3.80 (11.83)		3.83* (12.95)			
D13,G, 2, 4 10449.000		159.87 (15.30)		172.83* (16.54)						
D11,G, 2, 5 7487.000		103.17 (13.78)			119.34* (15.94)					
D09,G, 2, 5 10015.941		118.29 (11.81)			146.03* (14.58)					
D05,I, 3, 5 3667.057			47.42 (12.86)		53.78* (14.58)					
D07,I, 5, 7 13873.000					176.41 (12.86)		202.27* (14.58)			
D05,I, 7, 8 19386.986							197.83 (12.86)		224.37* (14.86)	
D03,I, 7, 8 27027.988							285.98 (10.57)		347.58* (12.86)	
D01,I, 7, 8 3897.000							27.58 (7.08)		41.19* (10.57)	
E13,G, 1, 3 10333.986	224.04 (21.68)		238.72* (23.10)							
E13,G, 1, 4 8036.777	174.22 (21.68)			190.53* (23.71)						
E13,G, 2, 4 978.232		21.86 (22.42)		23.12* (23.71)						
E11,G, 2, 4		282.21		314.22*						

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14015.000		(20.85)		(22.42)								
E08.C. 2. 4		151.61		167.94*								
8064.500		(18.81)		(20.85)								
E08.C. 2. 5		189.17			229.58*							
10588.500		(18.81)			(21.68)							
E07.I. 3. 5			6.59		7.48*							
375.943			(17.52)		(19.90)							
E07.I. 4. 6				324.77		380.00*						
17288.081				(18.81)		(20.85)						
E05.I. 5. 7					194.38		220.79*					
11085.000					(17.52)		(19.90)					
E03.I. 7. 9							211.13		239.81*			
12060.986							(17.52)		(19.90)			
E01.I. 7. 9							244.82		307.98*			
17878.982							(12.91)		(17.53)			
F13.C. 1. 3	316.12		282.85*								304.48	
20087.986	(15.86)		(14.80)								(15.18)	
F11.C. 1. 3	413.84		403.02*								385.74	
28410.992	(18.29)		(15.86)								(15.18)	
F09.C. 1. 3	921.48		844.58*								907.48	
33428.000	(15.80)		(18.29)								(15.18)	
F07.C. 3. 4		318.91		348.72*								
21708.888		(14.89)		(16.11)								
F05.I. 4. 5				138.97		152.40*						
9460.000				(14.69)		(16.11)						
F03.T. 5. 8						276.52		299.19*				
19821.986						(13.86)		(15.52)				
F01.T. 7. 9							223.47		262.28*			
17707.982							(12.62)		(14.81)			
G13.C. 1. 3	121.94		126.29*								130.58	
10585.000	(11.52)		(12.13)								(15.18)	
G11.C. 2. 4		135.48		144.88*								
12227.986		(11.15)		(11.83)								
G09.C. 2. 4		238.84		255.28*								
22984.986		(10.30)		(11.16)								
G07.C. 2. 5		181.34			214.85*							
18870.982		(9.08)			(10.76)							
G05.I. 4. 5			9.08		10.28*							
886.516			(9.08)		(10.30)							
G05.T. 5. 7					180.11		188.78*					

18472.473					(8.75)		(10.75)					
G03.T. 6. 8						1015.10		1136.18*				
73205.936						(13.86)		(15.52)				
G01.T. 7. 9							80.81		99.39*			
4010.000							(12.62)		(14.81)			
OVERSTORY REMOVAL CUTS												
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
INTERMEDIATE CUTS												
ACRES	144218.63	164346.88	8446.99	27722.57	79140.44	122877.84	120279.75	0.0	0.0	0.0	89482.94	
M CUNITS	2402.84	2402.84	141.48	472.78	1300.03	1880.18	1823.21	0.0	0.0	0.0	1356.35	
HARVEST CUTS												
ACRES	0.0	0.0	136182.88	114874.31	86955.38	27722.57	50649.44	132123.63	139525.13	0.0		
M CUNITS	0.0	0.0	2261.36	1930.06	1102.83	522.66	779.63	2402.84	2402.84	0.0		
TOTAL CUTS												
ACRES	144218.63	164346.88	145629.81	142596.88	166095.81	150600.50	170929.19	132123.63	139525.13	89482.94		
M CUNITS	2402.84	2402.84	2402.84	2402.84	2402.84	2402.84	2402.84	2402.84	2402.84	1356.35		

* = OVERSTORY REMOVAL CUT. + = HARVEST CUT

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MCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL02 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	11	12	13	14	15	16	17	18	19	20
A13,G, 2, 4 2216.000		45.54 (20.55)		53.63* (24.29)						
A11,G, 2, 5 3023.000			62.13 (20.55)		73.43* (24.29)					
A09,G, 2, 5 6423.000			131.99 (20.55)		155.01* (24.29)					
A07,I, 5, 7 4380.995					105.93 (24.29)		105.93* (24.29)			
A07,I, 5, 8 28481.043						692.05 (24.29)		692.05* (24.29)		
A05,I, 6, 8 10604.680						255.19 (24.29)		255.19* (24.29)		
A05,I, 6, 9 19245.344							467.47 (24.29)		467.47* (24.29)	
A03,I, 7, 9 14427.000							350.67 (24.29)		350.67* (24.29)	
A01,I, 7, 8 5526.000							134.62 (24.29)		134.62* (24.29)	
B13,G, 1, 3 9846.995	208.93 (21.01)		227.61* (23.11)							
B11,G, 1, 3 11262.995	237.08 (21.01)		260.78* (23.11)							
B09,G, 2, 4 9182.995		193.93 (21.01)		227.63* (24.79)						
B07,I, 2, 5 4432.995			102.45 (23.11)		121.07* (27.31)					
B05,I, 5, 7 2552.000					69.70 (27.31)		69.70* (27.31)			
B03,I, 7, 9 2472.000							67.51 (27.31)		67.51* (27.31)	
B01,I, 7, 9 171.000							4.67 (27.31)		4.67* (27.31)	
C13,G, 1, 3 9067.000	190.80 (21.01)		209.84* (23.11)							
C11,G, 1, 3 4381.995	92.07 (21.01)		101.27* (23.11)							
C09,G, 1, 3 1785.000	37.50 (21.01)		41.28* (23.11)							
C07,G, 2, 4 9043.995		185.87 (21.01)		225.04* (24.79)						
C05,I, 3, 5 951.000			21.98 (23.11)		25.97* (27.31)					
C03,I, 5, 7 296.000					7.34 (24.79)		8.08* (27.31)			
C13,G, 2, 4 10448.000			131.87 (12.62)		144.41* (13.82)					
C11,G, 2, 5 7487.000				94.49 (12.62)		103.47* (13.82)				
C09,G, 3, 5 10015.941				126.40 (12.62)		138.42* (13.82)				
C09,I, 3, 5 3887.097				49.30 (12.10)		50.98* (13.82)				
C07,I, 5, 7 13873.000						191.72 (13.82)		191.72* (13.82)		
C05,I, 7, 9 15368.995								212.68 (13.82)		212.68* (13.82)
C03,I, 7, 9 27027.995								341.09 (12.62)		373.53* (13.82)
C01,I, 7, 9 3887.000								53.86 (13.82)		53.86* (13.82)
E13,G, 1, 2 10333.995	190.99 (18.45)		224.87* (21.77)							
E13,G, 1, 4 8035.777		183.13 (20.30)		192.78* (23.98)						
E13,G, 2, 4 978.232		18.80 (20.30)		23.46* (23.98)						
E11,G, 2, 4		264.90		336.32*						

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14015.000		(20.30)		(23.99)						
E09,C, 2, 4		163.51		193.23*						
8054.500		(20.30)		(23.99)						
E09,C, 2, 5			214.95		254.02*					
10588.500			(20.30)		(23.99)					
E07,I, 3, 5			8.18		9.02*					
375.943			(21.77)		(23.99)					
E07,I, 4, 5				414.21		414.21*				
17288.081				(23.99)		(23.99)				
E05,I, 5, 7					288.17		288.17*			
11085.000					(23.99)		(23.99)			
E03,I, 7, 9							244.84	288.10*		
12060.986							(20.30)	(23.99)		
E01,I, 7, 9							421.72	421.72*		
17576.982							(23.99)	(23.99)		
F13,C, 1, 3		334.97*						304.48		
20057.986		(18.70)						(18.18)		
F11,C, 1, 3		424.38*						385.74		
25410.882		(18.70)						(18.18)		
F09,C, 1, 3		558.28*						507.45		
33429.000		(18.70)						(18.18)		
F07,C, 2, 4	329.54		388.81*						329.54	
21708.986	(15.18)		(17.91)						(15.18)	
F05,I, 4, 6			189.43		166.65*					
9460.000			(17.91)		(19.73)					
F03,T, 6, 8				393.06		393.06*				
19921.986				(19.73)		(19.73)				
F01,T, 7, 9					349.38		349.38*			
17707.882					(19.73)		(19.73)			
G13,C, 1, 3		178.77*						160.68		
10585.000		(16.70)						(15.18)		
G11,C, 2, 4	185.62		219.00*						185.62	
12227.986	(15.18)		(17.91)						(15.18)	
G09,C, 2, 4	348.81		411.30*						348.81	
22984.986	(15.18)		(17.91)						(15.18)	
G07,C, 2, 5		303.18		357.68*						
19970.882		(15.18)		(17.91)						
G05,I, 4, 5			17.85		19.66*					
995.515			(17.91)		(19.73)					
G05,T, 5, 7				384.48		384.48*				
18472.473				(19.73)		(19.73)				
G03,T, 6, 8					1444.35		1444.35*			
73205.938					(19.73)		(19.73)			
G01,T, 7, 9						79.12		79.12*		
4010.000						(19.73)		(19.73)		

OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	103801.81	87494.44	46899.95	56928.52	111431.88	74586.69	71493.31	48313.99	89482.94	56901.99
M CUNITS	1818.48	1278.54	850.81	1047.88	2286.54	1567.43	1691.20	907.63	1358.35	883.77
HARVEST CUTS										
ACRES	0.0	89482.94	103801.81	87494.44	46899.95	56928.52	111431.88	74586.69	71493.31	48313.99
M CUNITS	0.0	1494.37	2084.50	1509.82	890.23	1071.52	2287.39	1567.43	1735.87	840.06
TOTAL CUTS										
ACRES	103801.81	176977.38	150301.76	144422.96	158131.81	131515.19	182925.19	122900.68	160976.25	105215.94
M CUNITS	1818.48	2772.91	2935.32	2557.68	3276.77	2638.95	3978.49	2475.05	3094.02	1503.83

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	21	22	23	24	25	26	27	28	29	30
A13,C, 2, 4 2216.000		45.54 (20.55)		53.83* (24.29)						
A11,C, 2, 5 3023.000			62.12 (20.55)							
A09,C, 2, 5 6423.000			131.99 (20.55)							
A07,I, 5, 7 4380.865										
A07,I, 5, 8 28491.043										
A05,I, 6, 8 10504.880										
A05,I, 8, 8 19245.344										
A03,I, 7, 8 14437.000										
A01,I, 7, 8 5838.000										
B13,C, 1, 3 9848.995	205.83 (21.01)		244.18* (24.79)							
B11,C, 1, 3 11282.995	237.08 (21.01)		279.71* (24.79)							
B09,C, 2, 4 9182.995		192.93 (21.01)		227.65* (24.79)						
B07,I, 3, 5 4432.995			109.89 (24.79)							
B05,I, 5, 7 2852.000										
B03,I, 7, 8 2472.000										
B01,I, 7, 8 171.000										
C13,C, 1, 3 9067.000	190.50 (21.01)		224.77* (24.79)							
C11,C, 1, 3 4381.995	92.07 (21.01)		108.63* (24.79)							
C09,C, 1, 3 1785.000	37.50 (21.01)		44.25* (24.79)							
C07,C, 2, 4 5043.995		105.97 (21.01)		125.04* (24.79)						
C05,I, 3, 5 951.000			23.58 (24.79)							
C03,I, 5, 7 298.000										
D13,C, 2, 4 10448.000				131.87 (12.62)						
D11,C, 2, 5 7487.000										
D09,C, 2, 5 10015.941										
D09,I, 3, 5 3687.057										
D07,I, 5, 7 13873.000										
D05,I, 7, 8 15388.995										
D03,I, 7, 8 27027.995										
D01,I, 7, 8 3897.000										
E13,C, 1, 3 10333.995	209.78 (20.30)		247.91* (23.99)							
E13,C, 1, 4 8036.777		163.13 (20.30)		192.78* (23.99)						
E13,C, 2, 4 975.232		19.80 (20.30)		23.40* (23.99)						
E11,C, 2, 4		284.50		336.22*						

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14015.000		(20.30)		(23.99)							
E09.C. 2. 4		163.51		193.23*							
8054.500		(20.30)		(23.99)							
E09.C. 2. 5			214.95								
10588.500			(20.30)								
E07.I. 3. 5			8.02								
375.943			(23.99)								
E07.I. 4. 6				414.21							
17266.051				(23.99)							
E05.I. 5. 7											
11088.000											
E03.I. 7. 8											
12050.996											
E01.I. 7. 9											
17878.992											
F13.C. 1. 3	359.24*										
20057.996	(17.91)										
F11.C. 1. 3	455.11*										
25410.992	(17.91)										
F09.C. 1. 3	598.71*										
33428.000	(17.91)										
F07.C. 2. 4		388.81*									
21708.996		(17.91)									
F05.C. 4. 5		169.43		186.69*							
9460.000		(17.91)		(19.73)							
F03.T. 5. 6				393.06							
19921.996				(19.73)							
F01.T. 7. 8											
17707.992											
G13.C. 1. 3	188.58*										
10528.000	(17.91)										
G11.C. 2. 4		219.00*									
12227.996		(17.91)									
G09.C. 2. 4		411.30*									
22964.996		(17.91)									
G07.C. 2. 5	303.16		387.68*								
19870.992	(15.18)		(17.91)								
G05.I. 4. 6		17.65		19.65*							
996.516		(17.91)		(19.73)							
G05.T. 5. 7			384.46								

18472.473			(19.73)								
G03.T. 6. 8				1444.35							
73208.938				(19.73)							
G01.T. 7. 9											
4010.000											
OVERSTORY REMOVAL CUTS											
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS											
ACRES	66870.94	57880.01	44286.90	120842.94	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1276.99	1182.86	918.01	2383.49	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HARVEST CUTS											
ACRES	89482.94	56901.99	66870.94	57880.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1802.64	1019.11	1507.10	1358.44	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CUTS											
ACRES	156353.88	114882.00	110937.81	178822.94	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	3079.63	2181.77	2423.12	3741.94	0.0	0.0	0.0	0.0	0.0	0.0	0.0

( ) = OVERSTORY REMOVAL CUT, * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21625.46 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,G, 2, 4	2218.00	116.65	52.84
A11,G, 2, 5	3023.00	148.34	49.07
A09,G, 2, 5	6423.00	281.13	43.77
A07,I, 5, 7	4380.88	197.84	45.32
A07,I, 6, 8	28481.04	1325.89	46.53
A05,I, 6, 8	10504.88	446.13	42.47
A06,I, 8, 9	19245.34	842.37	43.77
A03,I, 7, 9	14437.00	587.81	38.33
A01,I, 7, 9	5836.00	177.05	31.87
B13,G, 1, 3	9849.00	404.20	41.04
B11,G, 1, 3	11283.00	447.28	39.84
B09,G, 2, 4	9163.00	351.98	38.33
B07,I, 3, 5	4433.00	161.72	38.48
B05,T, 5, 7	2552.00	93.10	38.48
B03,T, 7, 9	2472.00	90.18	38.48
B01,T, 7, 9	171.00	5.24	30.82
C13,G, 1, 3	9067.00	282.67	28.97
C11,G, 1, 3	4382.00	121.58	27.74
C09,G, 1, 3	1785.00	47.36	26.53
C07,G, 2, 4	5044.00	130.08	25.79
C05,I, 3, 5	951.00	23.57	24.78
C03,I, 5, 7	295.00	7.33	24.78
D13,G, 2, 4	10445.00	332.70	31.84
D11,G, 2, 5	7487.00	222.51	29.72
D09,G, 2, 5	10015.94	284.32	28.39
D08,I, 3, 5	3667.08	101.17	27.44
D07,I, 5, 7	13873.00	380.87	27.44
D05,I, 7, 9	15389.00	422.27	27.44
D03,I, 7, 9	27028.00	633.27	23.43
D01,I, 7, 9	3857.00	66.78	17.65
E13,G, 1, 3	10333.98	462.75	44.78
E13,G, 1, 4	8035.78	354.74	45.39
E13,G, 2, 4	975.22	44.89	46.13
E11,G, 2, 4	14015.00	606.43	43.27
E09,G, 2, 4	8054.50	319.44	39.85
E09,G, 2, 5	10588.50	428.73	40.49
E07,I, 3, 5	375.84	14.07	37.42
E07,I, 4, 6	17286.05	684.77	39.86
E05,I, 6, 7	11095.00	415.17	37.42
E03,I, 7, 9	12051.00	450.95	37.42
E01,I, 7, 9	17578.89	552.51	31.43
F13,G, 1, 3	20058.00	610.97	30.46
F11,G, 1, 3	25410.88	815.98	32.18
F09,G, 1, 3	33428.00	1086.05	31.89
F07,G, 2, 4	21708.00	656.84	30.80
F05,I, 4, 6	9480.00	291.37	30.80
F03,T, 6, 8	19822.00	585.71	29.40
F01,T, 7, 9	17707.98	488.73	27.43
G13,G, 1, 3	10585.00	250.23	23.84
G11,G, 2, 4	12226.00	281.12	22.99
G09,G, 2, 4	22955.00	492.83	21.46
G07,G, 2, 5	19870.99	398.22	19.84
G05,I, 4, 6	986.52	19.31	19.38
G05,T, 5, 7	18472.47	378.87	20.51
G03,T, 6, 8	73205.84	2152.26	29.40
G01,T, 7, 9	4010.00	109.89	27.43

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21625.48 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2713.68 M CUNITS/DECADE

AVERAGE OF POST-CONVERSION PERIODIC HARVESTS= 2623.08 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS -			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	144218.	2402.84	2402.84	0.	0.0	0.0	144218.	2402.84	2402.84
2	0.	0.0	0.0	184347.	2402.84	4805.68	0.	0.0	0.0	184347.	2402.84	4805.68
3	0.	0.0	0.0	8447.	141.48	4947.13	136183.	2261.38	2261.38	144630.	2402.84	7208.52
4	0.	0.0	0.0	27723.	472.79	5419.92	114674.	1930.08	4191.43	142397.	2402.84	9611.35
5	0.	0.0	0.0	79140.	1300.02	5719.93	66955.	1102.82	5294.25	146095.	2402.84	12014.19
6	0.	0.0	0.0	122878.	1880.18	6800.11	27723.	522.88	5816.91	150601.	2402.84	14417.03
7	0.	0.0	0.0	120280.	1622.21	10223.31	50849.	778.63	8595.55	170929.	2402.84	16819.86
8	0.	0.0	0.0	0.	0.0	10223.31	132124.	2402.84	8998.39	132124.	2402.84	19222.70
9	0.	0.0	0.0	0.	0.0	10223.31	139525.	2402.84	11402.23	139525.	2402.84	21625.54
10	0.	0.0	0.0	89483.	1358.35	11581.66	0.	0.0	11402.23	89483.	1358.35	22983.89
11	0.	0.0	0.0	103802.	1818.48	13400.14	0.	0.0	11402.23	103802.	1818.48	-24802.37
12	0.	0.0	0.0	87494.	1278.54	14678.68	89483.	1494.37	12896.59	188977.	2772.91	27575.28
13	0.	0.0	0.0	46700.	680.81	15539.48	103802.	2084.50	14981.09	150302.	2845.32	30520.59
14	0.	0.0	0.0	56929.	1047.86	16587.34	67494.	1508.82	16490.90	124423.	2857.68	33078.27
15	0.	0.0	0.0	111432.	2286.54	18873.89	46700.	890.23	17481.13	158132.	3276.77	36385.04
16	0.	0.0	0.0	74587.	1567.43	20441.31	56929.	1071.52	18552.65	131515.	2638.95	38993.98
17	0.	0.0	0.0	71493.	1691.20	22132.50	111432.	2287.29	20839.94	182925.	3978.49	42972.46
18	0.	0.0	0.0	46314.	607.63	22740.13	74587.	1567.43	22407.38	120901.	2175.05	45147.52
19	0.	0.0	0.0	89483.	1358.35	24098.48	71493.	1735.67	24143.02	160976.	3094.02	48241.53
20	0.	0.0	0.0	56802.	883.77	24982.25	46314.	640.06	24783.08	103216.	1503.83	49745.36
21	0.	0.0	0.0	88671.	1276.99	26238.23	89483.	1602.64	26385.72	178154.	2879.63	52624.98
22	0	0.0	0.0	57980.	1182.88	27401.89	56802.	1019.11	27404.83	114882.	2181.77	54806.75
23	0.	0.0	0.0	44267.	816.01	28217.90	88671.	1507.10	28911.93	110938.	2423.12	57229.87
24	0	0.0	0.0	120843.	2383.48	30701.38	57980.	1358.44	30270.38	178823.	3741.94	60971.80

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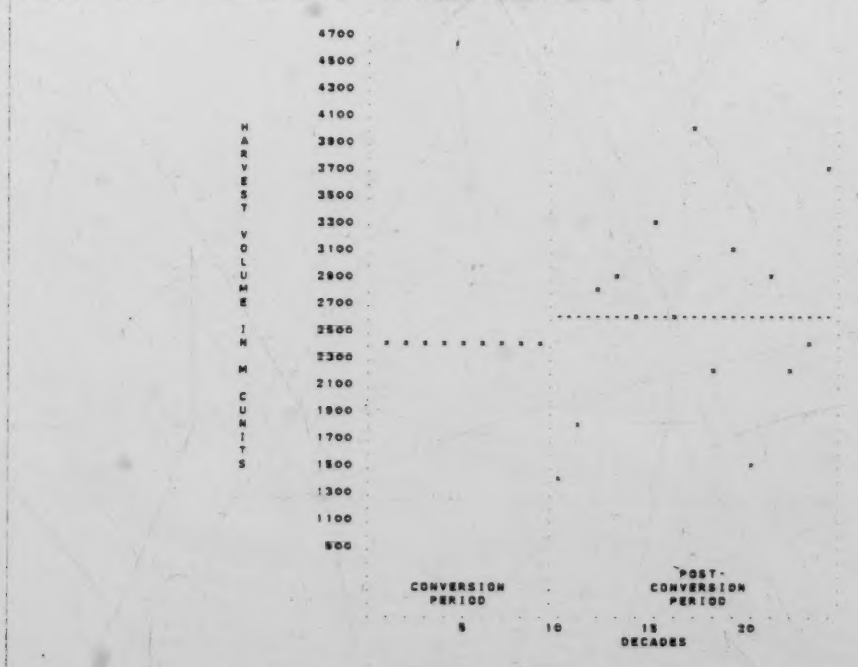
NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

16. Appendix 4: Fertilization Methods and Printouts

Static Single Treatment Program

The major assumption made in this program was that all current lodgepole pine stands were treated once only with 200 lb. N per acre, in the current planning period.

Because of the different ratios of merchantable volume to total volume for each age class, the response to fertilization was unique for each stand within the lodgepole pine volume class. However, since the stand was assumed to respond to the treatment over the course of one decade, the increase was not manifested until one decade after treatment. The ratio was therefore applied to the expected increase for the volume at the age when the increases are realized.

Since the yield tables provide volume estimates for ages 50 to 180 years, only one extra yield table was required to assimilate the fertilization of 10 and 30 year old lodgepole pine (stands A01 and A03). The estimated volume increase was applied to the yield table at age 50. Yield classes were also required to assimilate the fertilization of stands A05, A07, A09, A11, and A13. A total of six additional timber classes were required for the assimilation of this program into Timber RAM.

Management alternatives were provided to allow Timber RAM to assign to some or all of each pine stand, the appropriate volume class depicting increases from fertilization. Therefore, Timber RAM was not forced to necessarily assign any acres to the fertilization program.

A printout of the Timber RAM run for this program is provided in this appendix.

Continuous Fertilization

The assumptions made for this type of fertilization program were:

1. The fertilization program applied to current and regenerated stands of the lodgepole pine class.
2. The treatment consisted of application of 200 lb. of N per acre.
3. The treatments would occur over a continuous, indefinite period of time, to the current stands, with the schedule and timing optimized and determined by Timber RAM.
4. Regenerated stands would be treated one decade before rotation age.
5. Each stand would receive only one treatment.

The merchantable/total volume ratios developed earlier, were used in the assimilation of this program into Timber RAM.

Because of the continuous nature of this program, it was necessary to create the opportunity to treat the stands in the lodgepole pine timber class at any age. This led to the creation of 14 new volume classes – one to simulate treatment for each age class from 40 years to 170 years inclusive. It was not necessary to simulate treatment at 180 years, since the constraints do not allow harvesting of timber over 180 years of age.

The appropriate yield classes were provided in the set of management alternatives for each stand within the lodgepole pine timber class (stands A01 through A13). Stand A13, which contains 130 year old lodgepole pine, required only 5 additional yield classes. since treatment could only occur between the ages of 130 and 170 years. Stand A01, containing 10 year old lodgepole pine, required the full 14 additional yield classes, since volume increments from fertilization could accrue from the ages of 50 through 180 years [28].

The program was assumed to be continuous over an indefinite period of time, and therefore applied to the regenerated stands.

In the base run, rotation ages for regenerated stands were set at the culmination of mean annual increment. In the continuous fertilization program, the MAI at culmination age varied in magnitude, depending upon the age at which the regenerated stand was treated.

To determine the appropriate rotation age for the regenerated timber, the indexed [29] volume increases were applied to the normal yield tables for regenerated lodgepole pine. Fourteen yield tables were created, depicting fertilization treatment from ages 40 to 170 years. The values of MAI at culmination age were calculated and compared. The yield table showing the highest value of MAI at culmination age was the yield table depicting treatment at age 80, with the increase being manifested at age 90, at rotation age 100 years. The volume given for regenerated fertilized lodgepole pine at age 100 is 38.78 cunits / acre (giving an MAI of .3878 cunits / acre/year). This volume figure was used in the Timber RAM run simulating the continuous fertilization program.

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[28] See Run N35, this appendix
[29] See "Merchantability Standards" above.

1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN N35.1, NEW YIELD TABLES,FIR REG WS
ALT. C. CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, APR 23,1982

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2000.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 8
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 18

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER AND UPPER BOUNDS

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.100
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAG*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE: IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED:

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	9	34		

NOTE: IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5. TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	2.216	1.00				
A11		11	L	3.023	1.00				
A09		9	L	5.423	1.00				
A07		7	L	32.852	1.00				
A05		5	L	29.750	1.00				
A03		3	L	14.437	1.00				
A01		1	L	5.538	1.00				
B13		13	L	9.848	1.00				
B11		11	L	11.263	1.00				
B09		9	L	9.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.852	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	8.087	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.785	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.951	1.00				
C03		3	L	0.298	1.00				
D13		13	L	10.449	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.873	1.00				
D05		5	L	15.389	1.00				
D03		3	L	27.028	1.00				
D01		1	L	3.897	1.00				
E13		13	L	19.345	1.00				
E11		11	L	14.015	1.00				
E09		9	L	18.843	1.00				
E07		7	L	17.542	1.00				
E05		5	L	11.095	1.00				
E03		3	L	12.051	1.00				
E01		1	L	17.579	1.00				
F13		13	L	20.056	1.00				
F11		11	L	25.411	1.00				
F09		9	L	33.429	1.00				
F07		7	L	21.705	1.00				
F05		5	L	9.480	1.00				
F03		3	L	19.822	1.00				
F01		1	L	17.708	1.00				
G13		13	L	10.585	1.00				
G11		11	L	12.228	1.00				
G09		9	L	22.965	1.00				
G07		7	L	19.871	1.00				
G05		5	L	19.459	1.00				
G03		3	L	73.206	1.00				
G01		1	L	4.010	1.00				

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 668.031 THOUSAND ACRES

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6. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT CODES REG	NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF IMP SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	J		1	0	-1	1	1	4	3	6	3	5
A13	F		14	0	-1	1	1	4	3	6	3	5
A11	R		1	0	-1	1	1	6	3	8	3	5
A11	H		13	0	-1	1	1	6	3	8	3	5
A09	R		1	0	-1	1	1	8	3	10	3	5
A09	F		12	0	-1	1	1	8	3	10	3	5
A07	R		1	0	-1	1	1	10	3	12	3	5
A07	D		11	0	-1	1	1	10	3	12	3	5
A05	R		1	0	-1	1	3	12	5	14	3	5
A05	B		10	0	-1	1	3	12	5	14	3	5
A03	R		1	0	-1	1	5	14	7	16	3	5
A03	A		9	0	-1	1	5	14	7	16	3	5
A01	R		1	0	-1	1	7	16	9	18	3	5
A01	A		9	0	-1	1	7	16	9	18	3	5
B13	R		2	0	-1	1	1	4	3	6	3	5
B11	R		2	0	-1	1	1	6	3	8	3	5
B09	R		2	0	-1	1	1	8	3	10	3	5
B07	R		2	0	-1	1	1	10	3	12	3	5
B05	R		2	0	-1	1	3	12	5	14	3	5
B03	R		2	0	-1	1	5	14	7	16	3	5
B01	R		2	0	-1	1	7	16	9	18	3	5
C13	R		3	0	-1	1	1	4	3	6	3	5
C11	R		3	0	-1	1	1	6	3	8	3	5
C09	R		3	0	-1	1	1	8	3	10	3	5
C07	R		3	0	-1	1	1	10	3	12	3	5
C05	R		3	0	-1	1	3	12	5	14	3	5
C03	R		3	0	-1	1	5	14	7	16	3	5
D13	R		4	0	-1	1	1	4	3	6	3	5
D11	R		4	0	-1	1	1	6	3	8	3	5
D09	R		4	0	-1	1	1	8	3	10	3	5
D07	R		4	0	-1	1	1	10	3	12	3	5
D05	R		4	0	-1	1	3	12	5	14	3	5
D03	R		4	0	-1	1	5	14	7	16	3	5
D01	R		4	0	-1	1	7	16	9	18	3	5
E13	R		5	0	-1	1	1	4	3	6	3	5
E11	R		5	0	-1	1	1	6	3	8	3	5
E09	R		5	0	-1	1	1	8	3	10	3	5
E07	R		5	0	-1	1	1	10	3	12	3	5
E05	R		5	0	-1	1	3	12	5	14	3	5
E03	R		5	0	-1	1	5	14	7	16	3	5
E01	R		5	0	-1	1	7	16	9	18	3	5
F13	R		7	0	-1	1	1	4	3	6	3	5
F11	R		7	0	-1	1	1	6	3	8	3	5
F09	R		7	0	-1	1	1	8	3	10	3	5
F07	R		7	0	-1	1	1	10	3	12	3	5
F05	R		7	0	-1	1	3	12	5	14	3	5
F03	R		8	0	-1	1	5	14	7	16	3	5
F01	R		8	0	-1	1	7	16	9	16	3	5
G13	R		8	0	-1	1	1	4	3	6	3	5
G11	R		8	0	-1	1	1	6	3	8	3	5
G09	R		8	0	-1	1	1	8	3	10	3	5
G07	R		8	0	-1	1	1	10	3	12	3	5
G05	R		8	0	-1	1	3	12	5	14	3	5
G03	R		8	0	-1	1	5	14	7	16	3	5
G01	R		8	0	-1	1	7	16	9	16	3	5

7. VOLUME DATA

VOL CLASS 1 (PINE 6/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	18.88	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	18.89	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.36	0.0	26.36	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.38	0.0	28.38	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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VOL CLASS 2 (WHITE SPRUCE 8/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.28	0.0	8.28	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	0.0	0.0
8	15.58	0.0	15.58	0.0	21.01	0.0
9	17.18	0.0	17.18	0.0	0.0	0.0
10	18.40	0.0	18.40	0.0	21.01	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VOL CLASS 3 (BALSAM FIR 8/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	0.0	0.0
8	12.61	0.0	12.61	0.0	21.01	0.0
9	12.95	0.0	12.95	0.0	0.0	0.0
10	13.28	0.0	13.28	0.0	21.01	0.0
11	13.56	0.0	13.56	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.15	0.0	15.15	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

University of Alberta

VOL CLASS 4 (BLACK SPRUCE S/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME -

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	8.04	0.0	8.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.02	0.0
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.88	0.0	12.88	0.0	12.02	0.0
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.08	0.0	17.08	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

VOL CLASS 5 (SW-PL S/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	0.0	0.0
8	15.95	0.0	15.95	0.0	18.45	0.0
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	18.45	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.66	0.0	21.66	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

University of Alberta

VOL CLASS 6 (HS 6/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	0.0	0.0
7	8.31	0.0	8.31	0.0	15.15	0.0
8	9.08	0.0	9.08	0.0	0.0	0.0
9	9.78	0.0	9.78	0.0	15.15	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.78	0.0	10.78	0.0	0.0	0.0
12	11.15	0.0	11.15	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.13	0.0	12.13	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.63	0.0	12.63	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 7 (SN 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.62	0.0	8.62	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	0.0	0.0
7	13.30	0.0	13.30	0.0	15.15	0.0
8	14.69	0.0	14.69	0.0	0.0	0.0
9	15.80	0.0	15.80	0.0	15.15	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.85	0.0	15.85	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

University of Alberta

VOL CLASS 8 (MW S/S)
CLASS NUMBER 8

NORMAL ROTATION AGE - 0

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.96	0.0	7.96	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	0.0	0.0
7	13.83	0.0	13.83	0.0	15.18	0.0
8	13.88	0.0	13.88	0.0	0.0	0.0
9	14.81	0.0	14.81	0.0	15.18	0.0
10	15.83	0.0	15.83	0.0	0.0	0.0
11	16.08	0.0	16.08	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.98	0.0	16.98	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.25	0.0	17.25	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

VOL CLASS 8 (PINE S/S - PERT AT 40)
CLASS NUMBER 8

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.89	0.0	8.89	0.0	0.0	0.0
6	11.86	0.0	11.86	0.0	0.0	0.0
7	14.87	0.0	14.87	0.0	0.0	0.0
8	15.85	0.0	15.85	0.0	15.89	0.0
9	15.87	0.0	15.87	0.0	0.0	0.0
10	30.38	0.0	30.38	0.0	15.89	0.0
11	31.84	0.0	31.84	0.0	0.0	0.0
12	33.35	0.0	33.35	0.0	0.0	0.0
13	34.56	0.0	34.56	0.0	0.0	0.0
14	35.76	0.0	35.76	0.0	0.0	0.0
15	36.69	0.0	36.69	0.0	0.0	0.0
16	37.94	0.0	37.94	0.0	0.0	0.0
17	38.93	0.0	38.93	0.0	0.0	0.0
18	39.98	0.0	39.98	0.0	0.0	0.0

University of Alberta

VOL CLASS 10 (PINE 6/4 - FERT. AT 50)
CLASS NUMBER 10

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	12.04	0.0	12.04	0.0	0.0	0.0
7	14.55	0.0	14.55	0.0	0.0	0.0
8	18.73	0.0	18.73	0.0	18.89	0.0
9	18.65	0.0	18.65	0.0	0.0	0.0
10	20.36	0.0	20.36	0.0	18.89	0.0
11	21.82	0.0	21.82	0.0	0.0	0.0
12	23.33	0.0	23.33	0.0	0.0	0.0
13	24.84	0.0	24.84	0.0	0.0	0.0
14	25.84	0.0	25.84	0.0	0.0	0.0
15	26.87	0.0	26.87	0.0	0.0	0.0
16	28.02	0.0	28.02	0.0	0.0	0.0
17	29.01	0.0	29.01	0.0	0.0	0.0
18	29.94	0.0	29.94	0.0	0.0	0.0

VOL CLASS 11 (PINE 6/4 - FERT. AT 70)
CLASS NUMBER 11

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.80	0.0	16.80	0.0	18.89	0.0
9	16.72	0.0	16.72	0.0	0.0	0.0
10	20.44	0.0	20.44	0.0	18.89	0.0
11	21.98	0.0	21.98	0.0	0.0	0.0
12	23.41	0.0	23.41	0.0	0.0	0.0
13	24.71	0.0	24.71	0.0	0.0	0.0
14	25.92	0.0	25.92	0.0	0.0	0.0
15	27.04	0.0	27.04	0.0	0.0	0.0
16	28.10	0.0	28.10	0.0	0.0	0.0
17	29.08	0.0	29.08	0.0	0.0	0.0
18	30.01	0.0	30.01	0.0	0.0	0.0

University of Alberta

VOL CLASS 12 (PINE 8/4 - FERT AT 90)
CLASS NUMBER 12

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.48	0.0	5.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	18.11	0.0	18.11	0.0	18.89	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	20.47	0.0	20.47	0.0	18.89	0.0
11	22.03	0.0	22.03	0.0	0.0	0.0
12	23.44	0.0	23.44	0.0	0.0	0.0
13	24.75	0.0	24.75	0.0	0.0	0.0
14	25.95	0.0	25.95	0.0	0.0	0.0
15	27.08	0.0	27.08	0.0	0.0	0.0
16	28.13	0.0	28.13	0.0	0.0	0.0
17	29.12	0.0	29.12	0.0	0.0	0.0
18	30.06	0.0	30.06	0.0	0.0	0.0

VOL CLASS 13 (PINE 8/4 - FERT AT 110)
CLASS NUMBER 13

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.48	0.0	5.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	18.11	0.0	18.11	0.0	18.89	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	18.89	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	23.46	0.0	23.46	0.0	0.0	0.0
13	24.75	0.0	24.75	0.0	0.0	0.0
14	25.97	0.0	25.97	0.0	0.0	0.0
15	27.09	0.0	27.09	0.0	0.0	0.0
16	28.15	0.0	28.15	0.0	0.0	0.0
17	29.13	0.0	29.13	0.0	0.0	0.0
18	30.06	0.0	30.06	0.0	0.0	0.0

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VOL CLASS 14 (PINE 8/4 - FERT. AT 130)
CLASS NUMBER 14

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	16.99	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	16.99	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.98	0.0	25.98	0.0	0.0	0.0
15	27.11	0.0	27.11	0.0	0.0	0.0
16	28.18	0.0	28.18	0.0	0.0	0.0
17	29.15	0.0	29.15	0.0	0.0	0.0
18	30.06	0.0	30.06	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

University of Alberta

DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N35.1, NEW YIELD TABLES,FIR REG WS
ALT. C CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, APR 23,1982

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CASE OUTPUT=R

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	1	2	3	4	5	6	7	8	9	10
A13,F, 2, 4 2216.000		57.57 (25.98)		82.40* (28.18)						
A11,H, 2, 5 3023.000		70.82 (23.46)			81.89* (27.09)					
A09,F, 2, 5 8423.000		131.48 (20.47)			188.97* (24.75)					
A07,D, 5, 7 13483.313					296.06 (21.99)		332.64* (24.71)			
A07,D, 5, 8 19366.684					426.38 (21.89)			502.65* (25.82)		
A05,B, 5, 8 3831.105					65.65 (16.65)			82.36* (23.33)		
A05,B, 5, 8 7397.313						150.81 (20.38)		172.58* (23.33)		
A05,B, 5, 9 18821.573						383.21 (20.36)			483.78* (24.84)	
A03,A, 7, 9 14437.000							268.09 (18.57)		315.30* (21.84)	
A01,A, 7, 8 9538.000							80.13 (14.47)		102.84* (18.57)	
B13,R, 1, 3 9848.898	200.43 (20.35)		203.78* (20.69)							
B11,R, 1, 3 11282.898	317.88 (18.29)		339.81* (20.35)							
B08,R, 2, 4 9182.898		168.97 (18.40)		183.02* (18.93)						
B07,R, 3, 5			78.20		85.51*					

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4432.886			(17.19)		(19.29)							
B05,R, 5, 7 2882.000					43.67 (17.19)		49.23* (19.29)					
B03,R, 7, 9 2472.000							42.49 (17.19)		47.68* (19.29)			
B01,R, 7, 9 171.000							2.30 (13.43)		2.94* (17.19)			
C13,R, 1, 3 9087.000	126.38 (14.16)		134.28* (14.81)									
C11,R, 1, 3 4261.886	59.81 (13.58)		62.05* (14.16)									
C09,R, 1, 3 1785.000	23.12 (12.95)		24.24* (13.58)									
C07,R, 2, 4 5043.886		63.10 (12.51)		66.98* (13.28)								
C05,R, 3, 5 851.000			11.28 (11.83)		12.32* (12.96)							
C03,R, 5, 7 288.000					3.59 (11.83)		3.83* (12.96)					
D13,R, 2, 4 10449.000		159.67 (15.30)		172.83* (16.54)								
D11,R, 2, 5 7487.000		103.17 (13.78)			119.34* (15.94)							
D09,R, 2, 5 11408.783		134.74 (11.81)			166.34* (14.58)							
D09,R, 4, 6 2284.208				31.61 (13.78)		35.10* (15.30)						
D07,R, 5, 8 13873.000					178.41 (12.86)			212.26* (15.30)				
D05,R, 7, 9 15368.996							197.90 (12.86)		224.37* (14.58)			
D03,R, 7, 9 27027.886							285.86 (10.57)		347.58* (12.86)			
D01,R, 7, 9 3897.000							27.59 (7.08)		41.19* (10.57)			
E13,R, 1, 3 13203.216	286.25 (21.68)		304.99* (23.10)									
E12,R, 1, 4 5732.838	124.25 (21.68)			135.93* (23.71)								
E13,R, 2, 4		9.17		9.70*								

406.847		(22.42)		(23.71)								
E11,R, 1, 4 14015.000		292.21 (20.65)		314.22* (22.42)								
E09,R, 2, 4 8895.020		168.20 (18.81)		187.65* (20.85)								
E09,R, 2, 5 9847.880		181.48 (18.81)			209.17* (21.68)							
E07,R, 4, 6 17841.886				331.85 (18.81)		367.85* (20.65)						
E05,R, 5, 7 11085.000					194.38 (17.52)		220.79* (19.90)					
E03,R, 7, 9 12080.886							211.13 (17.52)		238.81* (19.90)			
E01,R, 7, 9 17878.882							244.52 (13.91)		307.98* (17.52)			
F13,R, 1, 3 20087.886	316.12 (15.86)		292.85* (14.60)								394.82 (15.18)	
F11,R, 1, 3 25410.882	413.94 (16.29)		403.02* (15.86)								385.74 (15.18)	
F09,R, 1, 3 33428.000	521.49 (15.80)		544.58* (16.29)								507.45 (15.18)	
F07,R, 2, 4 21708.886		316.91 (14.69)		349.73* (16.11)								
F05,R, 4, 6 9460.000				138.87 (14.69)		153.40* (16.11)						
F03,R, 6, 8 18921.886						276.52 (13.88)		309.18* (15.82)				
F01,R, 7, 9 17707.882							223.47 (12.82)		262.26* (14.81)			
G13,R, 1, 3 10888.000	121.94 (11.82)		126.29* (12.12)								180.68 (15.18)	
G11,R, 2, 4 12227.886		136.48 (11.16)		144.88* (11.83)								
G08,R, 2, 4 22864.886		236.54 (10.30)		255.29* (11.16)								
G07,R, 3, 5 18870.882		181.34 (9.08)			214.89* (10.76)							
G05,R, 4, 6 3237.883				29.40 (9.08)		33.35* (10.30)						
G08,R, 6, 7					166.26		174.65*					

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18231.388					(9.75)		(10.75)			
G03,R, 6, 8						1016.10		1135.18*		
73205.938						(13.88)		(15.92)		
G01,R, 7, 9							50.61		99.39*	
4010.000							(12.62)		(14.87)	
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	144784.94	165173.38	5363.99	32633.79	80430.44	119346.81	120279.78	0.0	0.0	89482.94
M CUNITS	2416.12	2416.12	87.45	531.82	1368.89	1826.43	1833.94	0.0	0.0	1388.38
HARVEST CUTS										
ACRES	0.0	0.0	139082.13	112848.63	63344.78	32633.79	43837.71	137316.00	139101.38	0.0
M CUNITS	0.0	0.0	2327.68	1883.29	1048.43	588.68	781.18	2415.12	2416.12	0.0
TOTAL CUTS										
ACRES	144784.94	165173.38	144436.08	145578.38	143775.19	151980.56	163917.44	137316.00	139101.38	89482.94
M CUNITS	2416.12	2416.12	2416.12	2416.12	2416.12	2416.12	2416.12	2415.12	2416.12	1388.38

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME
ACRES CUT

TOTAL VOLUME CUT - M CUNITS
(VOLUME CUT / ACRE - CUNITS/AC)

	11	12	13	14	15	16	17	18	19	20
A13,P, 3, 4		41.42		41.42*						
2216.000		(18.69)		(18.69)						
A11,N, 2, 5			98.50		98.50*					
3023.000			(18.69)		(18.69)					
A09,F, 3, 5			120.05		120.05*					
6423.000			(18.69)		(18.69)					
A07,D, 5, 7					251.53		251.53*			
13463.313					(18.69)		(18.69)			
A07,D, 5, 8						382.37		382.37*		
19388.884						(18.69)		(18.69)		
A05,B, 5, 6						88.00		88.00*		
3831.105						(18.69)		(18.69)		
A05,B, 6, 8						136.28		136.28*		
7287.313						(18.69)		(18.69)		
A05,B, 6, 9							351.78		351.78*	
18821.578							(18.69)		(18.69)	
A03,A, 7, 9							269.83		269.83*	
14437.000							(18.69)		(18.69)	
A01,A, 7, 9							103.91		103.91*	
5538.000							(18.69)		(18.69)	
B13,R, 1, 3	206.83		206.83*							
9848.988	(21.01)		(21.01)							
B11,R, 1, 3	237.08		237.08*							
11282.988	(21.01)		(21.01)							
B08,R, 2, 4		192.83		192.83*						
9182.988		(21.01)		(21.01)						
B07,R, 3, 5			93.14		93.14*					

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4432.992			(21.01)		(21.01)							
B05,R, 5, 7 2882.000					52.62 (21.01)		52.62* (21.01)					
B03,R, 7, 5 2472.000							51.84 (21.01)		51.84* (21.01)			
B01,R, 7, 5 171.000							3.59 (21.01)		3.59* (21.01)			
C13,R, 1, 3 9067.000	190.50 (21.01)		190.50* (21.01)									
C11,R, 1, 3 4381.996	92.07 (21.01)		92.07* (21.01)									
C09,R, 1, 3 1785.000	37.50 (21.01)		37.50* (21.01)									
C07,R, 3, 4 5043.996		105.97 (21.01)		105.97* (21.01)								
C05,R, 3, 5 951.000			19.98 (21.01)		19.98* (21.01)							
C03,R, 5, 7 286.000					6.22 (21.01)		6.22* (21.01)					
D13,R, 2, 4 10448.000			125.80 (12.02)		125.80* (12.02)							
D11,R, 3, 5 7487.000				89.99 (12.02)		89.99* (12.02)						
D09,R, 2, 5 11406.792				137.13 (12.02)		137.13* (12.02)						
D09,R, 4, 5 2294.206					27.58 (12.02)		27.58* (12.02)					
D07,R, 5, 6 13873.000							166.75 (12.02)		166.75* (12.02)			
D05,R, 7, 5 15368.996								184.98 (12.02)		184.98* (12.02)		
D03,R, 7, 5 27027.996								324.88 (12.02)		324.88* (12.02)		
D01,R, 7, 5 3897.000								46.84 (12.02)		46.84* (12.02)		
E13,R, 1, 2 13203.216	243.60 (18.45)		243.60* (18.45)									
E13,R, 1, 4 5732.836		105.77 (18.45)		105.77* (18.45)								
E13,R, 2, 4		7.55		7.55*								

408.987		(18.45)		(18.45)								
E11,R, 2, 4 14015.000		258.59 (18.45)		258.59* (18.45)								
E09,R, 2, 4 5995.020		185.98 (18.45)		185.98* (18.45)								
E09,R, 2, 5 9547.980			176.01 (18.45)		176.01* (18.45)							
E07,R, 4, 5 17641.996				325.49 (18.45)		325.49* (18.45)						
E05,R, 5, 7 11085.000					204.70 (18.45)		204.70* (18.45)					
E03,R, 7, 5 12050.996							222.34 (18.45)		222.34* (18.45)			
E01,R, 7, 5 17976.992							324.33 (18.45)		324.33* (18.45)			
F13,R, 1, 3 20067.996		304.68* (15.18)							304.68 (15.18)			
F11,R, 1, 3 25410.992		385.74* (15.18)							385.74 (15.18)			
F09,R, 1, 3 33429.000		507.45* (15.18)							507.45 (15.18)			
F07,R, 2, 4 21706.996	329.54 (15.18)		329.54* (15.18)								329.54 (15.18)	
F05,R, 4, 5 9480.000			143.80 (15.18)		143.80* (15.18)							
F03,R, 5, 5 18921.996					302.42 (15.18)		302.42* (15.18)					
F01,R, 7, 5 17707.992						266.61 (15.18)		266.61* (15.18)				
G13,R, 1, 3 10585.000		160.68* (15.18)							160.68 (15.18)			
G11,R, 2, 4 12227.996	185.62 (15.18)		185.62* (15.18)								185.62 (15.18)	
G09,R, 3, 4 22984.996	348.81 (15.18)		348.81* (15.18)								348.81 (15.18)	
G07,R, 3, 5 19870.992		303.18* (15.18)		303.18* (15.18)								
G05,R, 4, 5 3237.992			49.15 (15.18)		49.15* (15.18)							
G05,R, 5, 7				246.39		246.39*						

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16231.365			(15.18)		(15.18)					
G03,R, 6, 8				1111.27		1111.27*				
73205.938				(15.18)		(15.18)				
G01,R, 7, 9					50.87		50.87*			
4010.000					(15.18)		(15.18)			
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	106471.06	85585.75	47624.56	52788.19	122826.44	52038.09	84942.50	46313.88	89482.94	58901.88
M CUNITS	1871.42	1181.34	786.01	788.01	1957.43	896.31	1494.08	886.89	1388.35	883.77
HARVEST CUTS										
ACRES	0.0	89482.94	106471.06	85585.75	47624.56	52788.19	122826.44	52038.09	84942.50	46313.88
M CUNITS	0.0	1358.35	1871.42	1181.34	786.01	788.01	1957.43	896.31	1494.08	886.89
TOTAL CUTS										
ACRES	106471.06	185068.69	154095.56	118334.94	170652.94	104804.25	207770.94	98348.06	174425.44	105215.94
M CUNITS	1871.42	2539.69	2657.43	1880.35	2743.44	1686.32	3451.49	1482.00	2882.41	1420.47

* = OVERSTORY REMOVAL CUT; > = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	21	22	23	24	25	26	27	28	29	30
A13,F, 2, 4		41.42		41.42*						
2218.000		(18.69)		(18.69)						
A11,H, 2, 5			56.60							
3023.000			(18.69)							
A09,F, 2, 5			120.05							
6423.000			(18.69)							
A07,D, 5, 7										
13483.313										
A07,D, 5, 8										
19366.844										
A05,B, 5, 8										
3531.105										
A05,B, 6, 8										
7397.313										
A05,B, 6, 9										
18821.578										
A03,A, 7, 9										
14437.000										
A01,A, 7, 9										
5538.000										
B13,R, 1, 3	206.93		206.93*							
9846.996	(21.01)		(21.01)							
B11,R, 1, 3	237.08		237.08*							
11282.996	(21.01)		(21.01)							
B09,R, 2, 4		192.93		192.93*						
9182.996		(21.01)		(21.01)						
B07,R, 3, 5			93.14							

4432.898		(21.01)		
B05,R, 5, 7 2552.000				
B03,R, 7, 9 2472.000				
B01,R, 7, 9 171.000				
C13,R, 1, 3 9067.000	190.50 (21.01)		190.50* (21.01)	
C11,R, 1, 3 4381.898	92.07 (21.01)		92.07* (21.01)	
C09,R, 1, 3 1785.000	37.50 (21.01)		37.50* (21.01)	
C07,R, 2, 4 5043.898		105.87 (21.01)		105.87* (21.01)
C05,R, 3, 5 951.000			19.98 (21.01)	
C03,R, 5, 7 288.000				
D13,R, 2, 4 10448.000				125.60 (12.02)
D11,R, 2, 5 7487.000				
D09,R, 2, 5 11408.783				
D09,R, 4, 6 2284.208				
D07,R, 5, 6 13873.000				
D05,R, 7, 9 15388.898				
D03,R, 7, 9 27027.898				
D01,R, 7, 9 3897.000				
E13,R, 1, 3 13203.215	243.60 (18.45)		243.60* (18.45)	
E13,R, 1, 4 5732.836		105.77 (18.45)		105.77* (18.45)
E13,R, 2, 4		7.55		7.55*

408.847		(18.45)		(18.45)
E11,R, 2, 4 14015.000		258.58 (18.45)		258.58* (18.45)
E09,R, 2, 4 8938.020		165.98 (18.45)		165.98* (18.45)
E08,R, 2, 5 9847.580			175.01 (18.45)	
E07,R, 4, 6 17841.898				325.49 (18.45)
E05,R, 5, 7 11085.000				
E03,R, 7, 9 12050.898				
E01,R, 7, 9 17576.882				
F13,R, 1, 3 20097.898	304.48* (15.18)			
F11,R, 1, 3 25410.882	385.74* (15.18)			
F09,R, 1, 3 33429.000	507.48* (15.18)			
F07,R, 2, 4 21708.898		328.54* (15.18)		
F05,R, 4, 6 9480.000		143.80 (15.18)		143.80* (15.18)
F03,R, 6, 8 19821.898				302.42 (15.18)
F01,R, 7, 9 17707.882				
G13,R, 1, 3 10585.000	160.68* (15.18)			
G11,R, 2, 4 12227.898		185.62* (15.18)		
G09,R, 2, 4 22964.898		348.61* (15.18)		
G07,R, 2, 5 19970.882	303.18 (15.18)		303.18* (15.18)	
G05,R, 4, 6 3237.583		49.15 (15.18)		49.15* (15.18)
G05,R, 5, 7			246.39	

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18231.356			(15.18)							
603,R, 6, 8 73206.938				1111.27 (15.18)						
501,A, 7, 9 4010.000										
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	89540.19	58292.38	40709.37	121218.88	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1310.81	1070.83	714.08	1884.77	0.0	0.0	0.0	0.0	0.0	0.0
HARVEST CUTS										
ACRES	89482.84	58901.99	69540.19	58292.38	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1308.38	883.77	1310.81	1070.93	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CUTS										
ACRES	189023.13	118194.31	110249.50	179511.25	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	2669.19	1934.70	2024.87	2935.70	0.0	0.0	0.0	0.0	0.0	0.0

* = OVERSTORY REMOVAL CUT; + = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE TYL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21735.98 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,F, 2, 4	2216.00	119.97	54.14
A11,H, 2, 5	3023.00	152.81	50.55
A09,F, 2, 5	6423.00	290.45	45.22
A07,D, 5, 7	13463.31	626.74	46.70
A07,D, 5, 8	19388.68	928.91	47.91
A06,B, 5, 6	3531.10	148.24	41.98
A05,B, 5, 6	7397.31	323.19	43.69
A05,B, 6, 8	18821.58	846.97	45.00
A03,A, 7, 9	14437.00	583.40	40.41
A01,A, 7, 9	5638.00	182.98	33.04
B13,R, 1, 3	9849.00	404.20	41.04
B11,R, 1, 3	11283.00	447.38	39.64
B09,R, 2, 4	9183.00	351.98	38.33
B07,R, 3, 5	4433.00	161.72	36.48
B05,R, 5, 7	2552.00	93.10	36.48
B03,R, 7, 9	2472.00	90.18	36.48
B01,R, 7, 9	171.00	5.24	30.62
C13,R, 1, 3	9067.00	262.87	28.97
C11,R, 1, 3	4362.00	121.58	27.74
C09,R, 1, 3	1785.00	47.35	26.53
C07,R, 2, 4	5044.00	130.08	25.79
C05,R, 3, 5	951.00	23.57	24.78
C03,R, 5, 7	298.00	7.33	24.78
D13,R, 2, 4	10449.00	332.70	31.84
D11,R, 2, 5	7487.00	222.51	29.72
D09,R, 2, 5	11408.78	301.08	26.39
D09,R, 4, 6	2284.21	66.72	29.08
D07,R, 5, 8	13873.00	390.85	28.16
D05,R, 7, 9	15369.00	422.27	27.44
D03,R, 7, 9	27028.00	633.27	23.42
D01,R, 7, 9	3887.00	68.78	17.65
E13,R, 1, 3	13203.21	591.24	44.78
E13,R, 1, 4	5732.84	260.21	45.39
E13,R, 2, 4	408.55	18.88	46.13
E11,R, 2, 4	14015.00	606.42	43.27
E09,R, 2, 4	8985.02	358.74	39.86
E09,R, 2, 5	9847.88	390.65	40.49
E07,R, 4, 6	17842.00	698.88	39.66
E05,R, 6, 7	11088.00	418.17	37.42
E03,R, 7, 9	12851.00	480.95	37.42
E01,R, 7, 9	17878.88	552.51	31.43
F13,R, 1, 3	20088.00	610.97	30.46

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F11,R, 1, 3	25410.55	815.85	32.15	
F09,R, 1, 3	33428.00	1066.05	31.89	
F07,R, 2, 4	21708.00	686.84	30.60	
F05,R, 4, 6	9460.00	291.37	30.80	
F03,R, 6, 8	19822.00	585.71	29.40	
F01,R, 7, 9	17707.99	485.73	27.43	
G13,R, 1, 3	10548.00	250.23	23.84	
G11,R, 2, 4	12226.00	281.12	22.99	
G09,R, 3, 4	22885.00	492.63	21.48	
G07,R, 2, 5	19870.99	395.22	19.84	
G05,R, 4, 6	3237.59	62.74	19.38	
G06,R, 5, 7	18231.40	332.91	20.51	
G03,R, 6, 8	73205.94	2152.26	29.40	
G01,R, 7, 9	4010.00	109.99	27.43	

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8
TOTAL OBJECTIVE VALUE = 21736.88 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2264.87 M CUNITS/DECADE

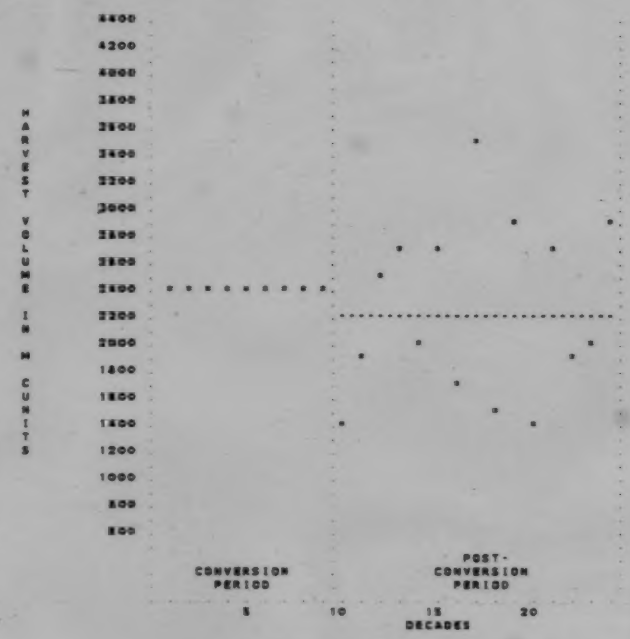
AVERAGE OF POST-CONVERSION PERIODIC HARVESTS= 2239.18 M CUNITS/DECADE

HARVEST REPORT

PERIOD	OVERSTORY REMOVAL CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	INTERMEDIATE CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	HARVEST CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	TOTAL CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	144785.	2415.12	2415.12	0.	0.0	0.0	144785.	2415.12	2415.12
2	0.	0.0	0.0	166173.	2415.12	4830.23	0.	0.0	0.0	166173.	2415.12	4830.23
3	0.	0.0	0.0	5384.	87.45	4917.68	139052.	2327.68	2327.68	144436.	2415.12	7245.34
4	0.	0.0	0.0	32634.	531.62	5449.31	112946.	1863.29	4210.98	145579.	2415.12	9660.46
5	0.	0.0	0.0	80430.	1366.68	6815.20	63345.	1044.43	5255.38	143775.	2415.12	12075.57
6	0.	0.0	0.0	118347.	1626.43	8442.63	32634.	588.68	5844.06	151981.	2415.12	14490.69
7	0.	0.0	0.0	130280.	1633.84	10076.56	43838.	781.18	6625.24	163017.	2415.12	16905.80
8	0.	0.0	0.0	0.	0.0	10076.56	137316.	2415.12	9044.38	137316.	2415.12	19320.92
9	0.	0.0	0.0	0.	0.0	10076.56	138101.	2415.12	11459.47	138101.	2415.12	21736.03
10	0.	0.0	0.0	89483.	1358.35	11434.91	0.	0.0	11459.47	89483.	1358.35	23094.38
11	0.	0.0	0.0	106471.	1671.42	13506.32	0.	0.0	11459.47	106471.	1671.42	24765.80
12	0.	0.0	0.0	65866.	1161.36	14667.68	89483.	1358.35	12817.82	155048.	2539.69	27305.48
13	0.	0.0	0.0	47825.	786.01	15473.67	106471.	1671.42	14488.22	154096.	2457.43	30162.92
14	0.	0.0	0.0	52769.	798.01	16272.68	65866.	1161.34	15670.57	118635.	1960.35	32143.27
15	0.	0.0	0.0	122828.	1957.43	18230.11	47825.	786.01	16456.58	170653.	2743.44	34886.71
16	0.	0.0	0.0	52035.	896.31	19126.41	52769.	798.01	17254.59	104804.	1694.32	36582.02
17	0.	0.0	0.0	84943.	1494.06	20620.48	122828.	1957.43	19213.02	207771.	3451.48	40033.51
18	0.	0.0	0.0	46314.	556.69	21177.17	52035.	896.31	20309.32	98349.	1453.00	41486.51
19	0.	0.0	0.0	89483.	1358.35	22535.52	84943.	1494.06	21803.38	174425.	2852.41	44338.93
20	0.	0.0	0.0	55802.	863.77	23399.29	46314.	556.69	22360.06	102216.	1420.47	45759.39
21	0.	0.0	0.0	89540.	1310.81	24710.09	89483.	1358.35	23718.43	179023.	2669.16	48428.54
22	0.	0.0	0.0	56292.	1070.93	25781.02	55802.	863.77	24582.20	112194.	1934.70	50363.24
23	0.	0.0	0.0	40709.	716.06	26485.07	89540.	1310.81	25893.00	130250.	2026.87	52389.11
24	0.	0.0	0.0	121219.	1884.77	28369.85	56292.	1070.93	26963.93	177511.	2935.70	55323.80

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

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1.1 PROBLEM TITLE

CAMPER TIMBER RAM ANALYSIS, RUN N35, NEW YIELD TABLES,PIR REG MS
ALT. C. CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, APRIL 22,1982.

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2000.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 9
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 16

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER AND UPPER BOUNDS

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.850	0.850
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.950	0.100
POST-CONVERSION PERIOD		
10	0.950	0.950
11	0.950	0.950
12	0.950	0.950
13	0.950	0.950
14	0.950	0.950
15	0.950	0.950
16	0.950	0.950
17	0.950	0.950
18	0.950	0.950
19	0.950	0.950
20	0.950	0.950
21	0.950	0.950
22	0.950	0.950
23	0.950	0.950
24	0.950	0.950

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3 PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES OBN IMP STOCK PAS*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE* IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4 ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED*

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	5	24		

NOTE* IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5 TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	2.216	1.00				
A11		11	L	3.033	1.00				
A09		9	L	6.423	1.00				
A07		7	L	22.093	1.00				
A05		5	L	20.780	1.00				
A03		3	L	14.437	1.00				
A01		1	L	6.530	1.00				
B13		13	L	9.646	1.00				
B11		11	L	11.283	1.00				
B09		9	L	9.183	1.00				
B07		7	L	4.423	1.00				
B05		5	L	2.582	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	0.867	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.765	1.00				
C07		7	L	0.644	1.00				
C05		5	L	0.891	1.00				
C03		3	L	0.286	1.00				
D13		13	L	10.449	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.873	1.00				
D05		5	L	15.380	1.00				
D03		3	L	27.038	1.00				
D01		1	L	2.857	1.00				
E13		13	L	19.346	1.00				
E11		11	L	14.010	1.00				
E09		9	L	18.643	1.00				
E07		7	L	17.642	1.00				
E05		5	L	11.095	1.00				
E03		3	L	12.081	1.00				
E01		1	L	17.579	1.00				
F13		13	L	20.058	1.00				
F11		11	L	25.611	1.00				
F09		9	L	33.429	1.00				
F07		7	L	21.700	1.00				
F05		5	L	9.460	1.00				
F03		3	L	10.922	1.00				
F01		1	L	17.708	1.00				
G13		13	L	10.585	1.00				
G11		11	L	13.220	1.00				
G09		9	L	22.985	1.00				
G07		7	L	19.971	1.00				
G05		5	L	19.480	1.00				
G03		3	L	72.206	1.00				
G01		1	L	0.010	1.00				

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 986.031 THOUSAND ACRES

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6. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT REC	CODES NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF SUSTAINED	IMP YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	R		1	0	-1		1	1	4	3	8	3	5
A13	J		18	0	-1		1	1	4	3	8	3	5
A13	K		19	0	-1		1	1	4	3	8	3	5
A13	L		20	0	-1		1	1	4	3	8	3	5
A13	M		21	0	-1		1	1	4	3	8	3	5
A13	N		22	0	-1		1	1	4	3	8	3	5
A11	R		1	0	-1		1	1	8	3	8	3	5
A11	H		16	0	-1		1	1	8	3	8	3	5
A11	I		17	0	-1		1	1	8	3	8	3	5
A11	J		18	0	-1		1	1	8	3	8	3	5
A11	K		19	0	-1		1	1	8	3	8	3	5
A11	L		20	0	-1		1	1	8	3	8	3	5
A11	M		21	0	-1		1	1	8	3	8	3	5
A11	N		22	0	-1		1	1	8	3	8	3	5
A09	R		1	0	-1		1	1	8	3	10	3	5
A09	F		14	0	-1		1	1	8	3	10	3	5
A09	G		15	0	-1		1	1	8	3	10	3	5
A09	H		16	0	-1		1	1	8	3	10	3	5
A09	I		17	0	-1		1	1	8	3	10	3	5
A09	J		18	0	-1		1	1	8	3	10	3	5
A09	K		19	0	-1		1	1	8	3	10	3	5
A09	L		20	0	-1		1	1	8	3	10	3	5
A09	M		21	0	-1		1	1	8	3	10	3	5
A09	N		22	0	-1		1	1	8	3	10	3	5
A07	R		1	0	-1		1	1	10	3	12	3	5
A07	D		12	0	-1		1	1	10	3	12	3	5
A07	E		13	0	-1		1	1	10	3	12	3	5
A07	F		14	0	-1		1	1	10	3	12	3	5
A07	G		15	0	-1		1	1	10	3	12	3	5
A07	H		16	0	-1		1	1	10	3	12	3	5
A07	I		17	0	-1		1	1	10	3	12	3	5
A07	J		18	0	-1		1	1	10	3	12	3	5
A07	K		19	0	-1		1	1	10	3	12	3	5
A07	L		20	0	-1		1	1	10	3	12	3	5
A07	M		21	0	-1		1	1	10	3	12	3	5
A07	N		22	0	-1		1	1	10	3	12	3	5
A05	R		1	0	-1		1	3	12	8	14	3	5
A05	B		10	0	-1		1	3	12	8	14	3	5
A05	C		11	0	-1		1	3	12	8	14	3	5
A05	D		12	0	-1		1	3	12	8	14	3	5
A05	E		13	0	-1		1	3	12	8	14	3	5
A05	F		14	0	-1		1	3	12	8	14	3	5
A05	G		15	0	-1		1	3	12	8	14	3	5
A05	H		16	0	-1		1	3	12	8	14	3	5
A05	I		17	0	-1		1	3	12	8	14	3	5
A05	J		18	0	-1		1	3	12	8	14	3	5
A05	K		19	0	-1		1	3	12	8	14	3	5
A05	L		20	0	-1		1	3	12	8	14	3	5
A05	M		21	0	-1		1	3	12	8	14	3	5
A05	N		22	0	-1		1	3	12	8	14	3	5
A03	R		1	0	-1		1	5	14	7	18	3	5
A03	A		9	0	-1		1	5	14	7	18	3	5
A03	B		10	0	-1		1	5	14	7	18	3	5
A03	C		11	0	-1		1	5	14	7	18	3	5
A03	D		12	0	-1		1	5	14	7	18	3	5
A03	E		13	0	-1		1	5	14	7	18	3	5
A03	F		14	0	-1		1	5	14	7	18	3	5
A03	G		15	0	-1		1	5	14	7	18	3	5
A03	H		16	0	-1		1	5	14	7	18	3	5
A03	I		17	0	-1		1	5	14	7	18	3	5
A03	J		18	0	-1		1	5	14	7	18	3	5
A03	K		19	0	-1		1	5	14	7	18	3	5
A03	L		20	0	-1		1	5	14	7	18	3	5
A03	M		21	0	-1		1	5	14	7	18	3	5
A03	N		22	0	-1		1	5	14	7	18	3	5
A01	R		1	0	-1		1	7	16	9	18	3	5
A01	A		9	0	-1		1	7	16	9	18	3	5
A01	B		10	0	-1		1	7	16	9	18	3	5
A01	C		11	0	-1		1	7	16	9	18	3	5
A01	D		12	0	-1		1	7	16	9	18	3	5
A01	E		13	0	-1		1	7	16	9	18	3	5
A01	F		14	0	-1		1	7	16	9	18	3	5
A01	G		15	0	-1		1	7	16	9	18	3	5
A01	H		16	0	-1		1	7	16	9	18	3	5
A01	I		17	0	-1		1	7	16	9	18	3	5
A01	J		18	0	-1		1	7	16	9	18	3	5
A01	K		19	0	-1		1	7	16	9	18	3	5
A01	L		20	0	-1		1	7	16	9	18	3	5
A01	M		21	0	-1		1	7	16	9	18	3	5
A01	N		22	0	-1		1	7	16	9	18	3	5
B13	R		2	0	-1		1	1	4	3	8	3	5
B11	R		2	0	-1		1	1	8	3	8	3	5
B09	R		2	0	-1		1	1	8	3	10	3	5
B07	R		2	0	-1		1	1	10	3	12	3	5
B05	R		2	0	-1		1	3	12	8	14	3	5
B03	R		2	0	-1		1	5	14	7	18	3	5
B01	R		2	0	-1		1	7	16	9	18	3	5
C13	R		3	0	-1		1	1	4	3	8	3	5
C11	R		3	0	-1		1	1	8	3	8	3	5
C09	R		3	0	-1		1	1	8	3	10	3	5
C07	R		3	0	-1		1	1	10	3	12	3	5
C05	R		3	0	-1		1	3	12	8	14	3	5
C03	R		3	0	-1		1	5	14	7	18	3	5
D13	R		4	0	-1		1	1	4	3	8	3	5
D11	R		4	0	-1		1	1	8	3	8	3	5
D09	R		4	0	-1		1	1	8	3	10	3	5
D07	R		4	0	-1		1	1	10	3	12	3	5
D05	R		4	0	-1		1	3	12	8	14	3	5
D03	R		4	0	-1		1	5	14	7	18	3	5
D01	R		4	0	-1		1	7	16	9	18	3	5
E13	R		5	0	-1		1	1	4	3	8	3	5
E11	R		5	0	-1		1	1	8	3	8	3	5
E09	R		5	0	-1		1	1	8	3	10	3	5
E07	R		5	0	-1		1	1	10	3	12	3	5
E05	R		5	0	-1		1	3	12	8	14	3	5
E03	R		5	0	-1		1	5	14	7	18	3	5
E01	R		5	0	-1		1	7	16	9	18	3	5
F13	R		7	0	-1		1	1	4	3	8	3	5
F11	R		7	0	-1		1	1	8	3	8	3	5
F09	R		7	0	-1		1	1	8	3	10	3	5
F07	R		7	0	-1		1	1	10	3	12	3	5
F05	R		7	0	-1		1	3	12	8	14	3	5
F03	R		8	0	-1		1	5	14	7	18	3	5
F01	R		8	0	-1		1	7	16	9	18	3	5
C13	R		8	0	-1		1	1	4	3	8	3	5

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C11	R	8	0	-1	1	1	2	3	3	3	3
C09	R	8	0	-1	1	1	8	3	10	3	3
C07	R	8	0	-1	1	1	10	3	12	3	3
C05	R	8	0	-1	1	3	12	8	14	3	3
C03	R	8	0	-1	1	5	14	7	16	3	3
C01	R	8	0	-1	1	7	16	8	16	3	3

7. VOLUME DATA

VOL CLASS 1 (PINE 8/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	16.89	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	16.89	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

University of Alberta

VOL CLASS 2 (WHITE SPRUCE 6/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.28	0.0	8.28	0.0	0.0	0.0
6	10.80	0.0	10.80	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	0.0	0.0
8	15.86	0.0	15.86	0.0	21.01	0.0
9	17.19	0.0	17.19	0.0	0.0	0.0
10	18.40	0.0	18.40	0.0	21.01	0.0
11	18.29	0.0	18.29	0.0	0.0	0.0
12	18.93	0.0	18.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.80	0.0	20.80	0.0	0.0	0.0
15	20.88	0.0	20.88	0.0	0.0	0.0
16	20.85	0.0	20.85	0.0	0.0	0.0
17	20.45	0.0	20.45	0.0	0.0	0.0
18	20.33	0.0	20.33	0.0	0.0	0.0

VOL CLASS 3 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.26	0.0	7.26	0.0	0.0	0.0
6	10.64	0.0	10.64	0.0	0.0	0.0
7	11.63	0.0	11.63	0.0	0.0	0.0
8	12.61	0.0	12.61	0.0	21.01	0.0
9	12.95	0.0	12.95	0.0	0.0	0.0
10	13.28	0.0	13.28	0.0	21.01	0.0
11	13.56	0.0	13.56	0.0	0.0	0.0
12	13.67	0.0	13.67	0.0	0.0	0.0
13	14.15	0.0	14.15	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.61	0.0	14.61	0.0	0.0	0.0
16	15.15	0.0	15.15	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

University of Alberta

VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.02	0.0
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.86	0.0	12.86	0.0	12.02	0.0
12	13.76	0.0	13.76	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

VOL CLASS 5 (SW-PL 6/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	0.0	0.0
8	15.85	0.0	15.85	0.0	18.45	0.0
9	17.53	0.0	17.53	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	18.45	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

University of Alberta

VOL CLASS 6 (MS 6/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	0.0	0.0
7	8.21	0.0	8.21	0.0	15.18	0.0
8	9.08	0.0	9.08	0.0	0.0	0.0
9	8.75	0.0	8.75	0.0	15.18	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.76	0.0	10.76	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 7 (SM 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	0.0	0.0
7	13.30	0.0	13.30	0.0	15.18	0.0
8	14.89	0.0	14.89	0.0	0.0	0.0
9	15.80	0.0	15.80	0.0	15.18	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.86	0.0	15.86	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

University of Alberta

VOL CLASS 8 (MW 6/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.84	0.0	7.84	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	0.0	0.0
7	12.82	0.0	12.82	0.0	13.18	0.0
8	13.48	0.0	13.48	0.0	0.0	0.0
9	14.81	0.0	14.81	0.0	13.18	0.0
10	15.52	0.0	15.52	0.0	0.0	0.0
11	15.98	0.0	15.98	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.98	0.0	16.98	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.25	0.0	17.25	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

VOL CLASS 9 (PINE 6/4 - FERT. AT 40)
CLASS NUMBER 9

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.89	0.0	8.89	0.0	0.0	0.0
6	11.86	0.0	11.86	0.0	0.0	0.0
7	14.47	0.0	14.47	0.0	0.0	0.0
8	15.65	0.0	15.65	0.0	15.39	0.0
9	16.57	0.0	16.57	0.0	0.0	0.0
10	20.28	0.0	20.28	0.0	15.39	0.0
11	21.84	0.0	21.84	0.0	0.0	0.0
12	23.25	0.0	23.25	0.0	0.0	0.0
13	24.56	0.0	24.56	0.0	0.0	0.0
14	25.78	0.0	25.78	0.0	0.0	0.0
15	26.89	0.0	26.89	0.0	0.0	0.0
16	27.94	0.0	27.94	0.0	0.0	0.0
17	28.93	0.0	28.93	0.0	0.0	0.0
18	29.86	0.0	29.86	0.0	0.0	0.0

University of Alberta

VOL CLASS 10 (PINE 8/4 - FERT. AT 60)
CLASS NUMBER 10

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	12.04	0.0	12.04	0.0	0.0	0.0
7	14.85	0.0	14.85	0.0	0.0	0.0
8	16.73	0.0	16.73	0.0	19.39	0.0
9	16.85	0.0	16.85	0.0	0.0	0.0
10	20.36	0.0	20.36	0.0	19.39	0.0
11	21.82	0.0	21.82	0.0	0.0	0.0
12	22.33	0.0	23.33	0.0	0.0	0.0
13	24.84	0.0	24.84	0.0	0.0	0.0
14	25.84	0.0	25.84	0.0	0.0	0.0
15	26.87	0.0	26.87	0.0	0.0	0.0
16	28.03	0.0	28.03	0.0	0.0	0.0
17	28.01	0.0	28.01	0.0	0.0	0.0
18	28.84	0.0	28.84	0.0	0.0	0.0

VOL CLASS 11 (PINE 8/4 - FERT AT 60)
CLASS NUMBER 11

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	14.80	0.0	14.80	0.0	0.0	0.0
8	16.78	0.0	16.78	0.0	19.39	0.0
9	16.70	0.0	16.70	0.0	0.0	0.0
10	20.41	0.0	20.41	0.0	19.39	0.0
11	21.97	0.0	21.97	0.0	0.0	0.0
12	23.38	0.0	23.38	0.0	0.0	0.0
13	24.89	0.0	24.89	0.0	0.0	0.0
14	26.89	0.0	26.89	0.0	0.0	0.0
15	27.02	0.0	27.02	0.0	0.0	0.0
16	28.07	0.0	28.07	0.0	0.0	0.0
17	29.06	0.0	29.06	0.0	0.0	0.0
18	29.99	0.0	29.99	0.0	0.0	0.0

University of Alberta

VOL CLASS 12 (PINE 6/4 - FERT. AT 70)
CLASS NUMBER 12

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.80	0.0	16.80	0.0	19.39	0.0
9	18.72	0.0	18.72	0.0	0.0	0.0
10	20.44	0.0	20.44	0.0	19.39	0.0
11	21.99	0.0	21.99	0.0	0.0	0.0
12	23.41	0.0	23.41	0.0	0.0	0.0
13	24.71	0.0	24.71	0.0	0.0	0.0
14	25.93	0.0	25.93	0.0	0.0	0.0
15	27.04	0.0	27.04	0.0	0.0	0.0
16	28.10	0.0	28.10	0.0	0.0	0.0
17	29.08	0.0	29.08	0.0	0.0	0.0
18	30.01	0.0	30.01	0.0	0.0	0.0

VOL CLASS 13 (PINE 6/4 - FERT. AT 80)
CLASS NUMBER 13

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	19.39	0.0
9	18.74	0.0	18.74	0.0	0.0	0.0
10	20.46	0.0	20.46	0.0	19.39	0.0
11	22.01	0.0	22.01	0.0	0.0	0.0
12	23.42	0.0	23.42	0.0	0.0	0.0
13	24.73	0.0	24.73	0.0	0.0	0.0
14	25.93	0.0	25.93	0.0	0.0	0.0
15	27.06	0.0	27.06	0.0	0.0	0.0
16	28.11	0.0	28.11	0.0	0.0	0.0
17	29.10	0.0	29.10	0.0	0.0	0.0
18	30.03	0.0	30.03	0.0	0.0	0.0

University of Alberta

VOL CLASS 14 (PINE 6/4 - FERT. AT 90)
CLASS NUMBER 14

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.45	0.0	8.45	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	19.39	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	20.47	0.0	20.47	0.0	19.39	0.0
11	22.03	0.0	22.03	0.0	0.0	0.0
12	23.44	0.0	23.44	0.0	0.0	0.0
13	24.75	0.0	24.75	0.0	0.0	0.0
14	25.95	0.0	25.95	0.0	0.0	0.0
15	27.08	0.0	27.08	0.0	0.0	0.0
16	28.13	0.0	28.13	0.0	0.0	0.0
17	29.12	0.0	29.12	0.0	0.0	0.0
18	30.05	0.0	30.05	0.0	0.0	0.0

VOL CLASS 15 (PINE 6/4 - FERT. AT 100)
CLASS NUMBER 15

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.45	0.0	8.45	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	19.39	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.78	0.0	19.78	0.0	19.39	0.0
11	22.03	0.0	22.03	0.0	0.0	0.0
12	23.45	0.0	23.45	0.0	0.0	0.0
13	24.75	0.0	24.75	0.0	0.0	0.0
14	25.95	0.0	25.95	0.0	0.0	0.0
15	27.08	0.0	27.08	0.0	0.0	0.0
16	28.14	0.0	28.14	0.0	0.0	0.0
17	29.12	0.0	29.12	0.0	0.0	0.0
18	30.05	0.0	30.05	0.0	0.0	0.0

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VOL CLASS 16 (PINE 6/4 - FERT. AT 110)
CLASS NUMBER 16

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	19.39	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	19.39	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	23.48	0.0	23.48	0.0	0.0	0.0
13	24.75	0.0	24.75	0.0	0.0	0.0
14	25.97	0.0	25.97	0.0	0.0	0.0
15	27.08	0.0	27.08	0.0	0.0	0.0
16	28.15	0.0	28.15	0.0	0.0	0.0
17	29.13	0.0	29.13	0.0	0.0	0.0
18	30.08	0.0	30.08	0.0	0.0	0.0

VOL CLASS 17 (PINE 6/4 - FERT. AT 120)
CLASS NUMBER 17

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	19.39	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.78	0.0	19.78	0.0	19.39	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.77	0.0	24.77	0.0	0.0	0.0
14	25.97	0.0	25.97	0.0	0.0	0.0
15	27.10	0.0	27.10	0.0	0.0	0.0
16	28.15	0.0	28.15	0.0	0.0	0.0
17	29.14	0.0	29.14	0.0	0.0	0.0
18	30.07	0.0	30.07	0.0	0.0	0.0

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VOL CLASS 18 (PINE 8/4 - FERT. AT 130)
CLASS NUMBER 18

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	18.11	0.0	18.11	0.0	19.39	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	19.39	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.88	0.0	25.88	0.0	0.0	0.0
15	27.11	0.0	27.11	0.0	0.0	0.0
16	28.16	0.0	28.16	0.0	0.0	0.0
17	29.15	0.0	29.15	0.0	0.0	0.0
18	30.08	0.0	30.08	0.0	0.0	0.0

VOL CLASS 19 (PINE 8/4 - FERT AT 140)
CLASS NUMBER 19

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	18.11	0.0	18.11	0.0	19.39	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	19.39	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	27.12	0.0	27.12	0.0	0.0	0.0
16	28.17	0.0	28.17	0.0	0.0	0.0
17	29.18	0.0	29.18	0.0	0.0	0.0
18	30.09	0.0	30.09	0.0	0.0	0.0

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VOL CLASS 20 (PINE 8/4 - FERT AT 180)
CLASS NUMBER 20

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	18.11	0.0	18.11	0.0	19.39	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	19.39	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	26.18	0.0	26.18	0.0	0.0	0.0
17	29.16	0.0	29.16	0.0	0.0	0.0
18	30.09	0.0	30.09	0.0	0.0	0.0

VOL CLASS 21 (PINE 8/4 - FERT. AT 180)
CLASS NUMBER 21

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	18.11	0.0	18.11	0.0	19.39	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	19.39	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.17	0.0	28.17	0.0	0.0	0.0
18	30.10	0.0	30.10	0.0	0.0	0.0

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VOL CLASS 22 (PINE S/A - FERT. AT 170)
CLASS NUMBER 22

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	16.39	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.76	0.0	19.76	0.0	18.39	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.36	0.0	26.36	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	30.11	0.0	30.11	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVL03

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N35, NEW YIELD TABLES,FIR REG WS
ALT. C. CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, APRIL 22,1982.

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CASE OUTPUT=R

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC) 1	2	3	4	5	6	7	8	9	10
A13,J, 2, 4 2216.000		57.57 (25.98)		62.40* (28.16)						
A11,H, 2, 5 3023.000		70.92 (23.46)			81.69* (27.02)					
A09,F, 2, 5 6423.000		131.48 (20.47)			158.97* (24.75)					
A07,C, 5, 7 13617.711					300.00 (22.03)		337.04* (24.75)			
A07,C, 5, 8 19234.281					423.73 (22.03)			499.32* (25.96)		
A05,E, 5, 9 3894.007					69.23 (18.74)				91.38* (24.73)	
A05,F, 5, 8 11077.848						226.76 (20.47)		289.66* (23.44)		
A05,F, 5, 9 14878.141						306.60 (20.47)			370.71* (24.75)	
A03,E, 7, 9 14437.000							270.55 (18.74)		317.78* (22.01)	
A01,C, 7, 9 5538.000							80.85 (14.60)		103.56* (18.70)	
B13,R, 1, 3 9848.996	200.43 (20.35)		203.78* (20.69)							
B11,R, 1, 3 11282.996	217.65 (19.29)		229.81* (20.35)							
B09,R, 2, 4 9182.996		168.97 (18.40)		183.02* (19.93)						
B07,R, 3, 5			76.20		85.51*					

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4432.898			(17.18)		(19.28)							
B05,R, 5, 7 2552.000					43.67 (17.19)		49.23* (19.29)					
B03,R, 7, 9 2472.000							42.49 (17.19)		47.88* (19.29)			
B01,R, 7, 9 171.000							2.30 (13.43)		2.94* (17.19)			
C13,R, 1, 3 9087.000	128.35 (14.16)		134.28* (14.81)									
C11,R, 1, 3 4381.998	59.51 (13.58)		62.05* (14.16)									
C09,R, 1, 3 1785.000	23.12 (12.95)		24.24* (13.58)									
C07,R, 2, 4 5043.998		83.10 (12.51)		88.98* (13.38)								
C05,R, 3, 5 951.000			11.28 (11.83)		13.32* (12.95)							
C03,R, 5, 7 298.000					3.80 (11.83)		3.83* (12.95)					
D13,R, 2, 4 10449.000		159.87 (15.30)		172.83* (16.54)								
D11,R, 2, 5 7487.000		103.17 (13.78)			119.34* (15.94)							
D09,R, 2, 5 11882.375		137.73 (11.81)			170.04* (14.58)							
D09,R, 4, 5 2040.824				26.12 (13.78)		31.22* (15.30)						
D07,R, 5, 8 13873.000					178.41 (12.86)			212.28* (15.30)				
D05,R, 7, 9 16388.998							197.90 (12.86)		224.37* (14.58)			
D03,R, 7, 9 27027.998							285.69 (10.57)		347.58* (12.86)			
D01,R, 7, 9 3887.000							27.59 (7.08)		41.09* (10.57)			
E13,R, 1, 3 13268.849	287.63 (21.68)		306.47* (23.10)									
E13,R, 1, 4 5737.012	124.38 (21.68)			136.02* (23.71)								
E13,R, 2, 4		7.85		8.09*								

341.037		(22.42)		(23.71)								
E11,R, 2, 4 14018.000		292.21 (20.85)		314.22* (22.42)								
E09,R, 2, 4 9060.367		170.43 (18.81)		188.81* (20.85)								
E09,R, 2, 5 9562.633		180.25 (18.81)			207.75* (21.68)							
E07,R, 4, 5 17841.998				331.85 (18.81)		387.84* (20.85)						
E05,R, 5, 7 11095.000					194.38 (17.52)		220.79* (19.90)					
E03,R, 7, 9 12050.998							211.13 (17.52)		239.81* (19.90)			
E01,R, 7, 9 17578.992							244.52 (13.91)		307.98* (17.52)			
F13,R, 1, 3 20087.998	316.12 (15.86)		282.85* (14.80)								304.43 (15.18)	
F11,R, 1, 3 25410.992	413.94 (16.29)		403.02* (15.86)								385.74 (15.18)	
F09,R, 1, 3 33429.000	521.45 (15.80)		544.58* (16.29)								507.45 (15.18)	
F07,R, 2, 4 21708.998		318.91 (14.69)		349.73* (16.11)								
F05,R, 4, 5 9480.000				138.87 (14.69)		152.40* (16.11)						
F03,R, 5, 8 19921.998						276.52 (13.86)		308.19* (15.52)				
F01,R, 7, 9 17707.992							223.47 (12.62)		282.26* (14.81)			
G13,R, 1, 3 10585.000	121.94 (11.52)		125.29* (12.12)								160.68 (15.18)	
G11,R, 2, 4 12227.998		136.46 (11.16)		144.86* (11.83)								
G09,R, 2, 4 22984.998		238.54 (10.30)		258.29* (11.16)								
G07,R, 2, 5 19970.992		181.34 (9.08)			214.89* (10.76)							
G05,R, 4, 5 3800.992				34.51 (9.08)		39.15* (10.30)						
G05,R, 5, 7					182.76		188.59*					

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  15668.039                                          ( 9.75)          ( 10.76)

G03,R, 6, 8                                                  1016.10          1136.16*
  73206.938                                                ( 13.88)         ( 15.52)

G01,R, 7, 9                                                                 50.61            59.29*
   4010.000                                                              ( 12.62)         ( 14.81)

OVERSTORY REMOVAL CUTS
  ACRES          0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
  M CUNITS       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0

INTERMEDIATE CUTS
  ACRES     144852.88 165359.06  5383.99  32943.57  80030.00 119183.88 120279.75       0.0       0.0  89482.94
  M CUNITS    2416.59   2416.59    87.45    533.45   1365.88   1825.98   1637.11       0.0       0.0   1358.35

HARVEST CUTS
  ACRES          0.0       0.0 139115.81 112947.25  63532.99  32943.57  43228.75 137313.06 138951.94       0.0
  M CUNITS       0.0       0.0   2328.14   1883.14   1050.71    590.61    779.48   2416.59   2416.59       0.0

TOTAL CUTS
  ACRES     144852.88 165359.06 144499.75 145890.81 143562.94 152127.44 163508.50 137313.06 138951.94  89482.94
  M CUNITS    2416.59   2416.59   2416.59   2416.59   2416.59   2416.59   2416.59   2416.59   2416.59   1358.35

+ = OVERSTORY REMOVAL CUT;    * = HARVEST CUT
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                                    NCFI TIMBER RAM ANALYSIS
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OBJECTIVE: TVL03  -  HARVEST VOLUME    OPTIMIZED THROUGH PERIOD  9

                                  ********************************
                                  *                              *
                                  *    TIMBER HARVEST SCHEDULE   *
                                  *        PERIODS 11 - 20       *
                                  *                              *
                                  ********************************

ACTIVITY NAME                                          TOTAL VOLUME CUT - M CUNITS
 ACRES CUT                                            (VOLUME CUT / ACRE -  CUNITS/AC)

                 11        12        13        14        15        16        17        18        19        20

A13,J, 2, 4                42.97                42.97*
   2216.000              ( 19.39)             ( 19.39)

A11,H, 2, 5                          58.62                58.62*
   3023.000                        ( 19.39)             ( 19.39)

A09,F, 2, 5                         124.54               124.54*
   6423.000                        ( 19.39)             ( 19.39)

A07,G, 5, 7                                             264.05               264.05*
  13617.711                                            ( 19.39)             ( 19.39)

A07,G, 5, 8                                                       372.95               372.95*
  19234.281                                                     ( 19.39)             ( 19.39)

A05,E, 5, 9                                                                 71.62                71.63*
   3694.007                                                                ( 19.39)             ( 19.39)

A06,F, 6, 8                                                       214.80               214.80*
  11077.848                                                     ( 19.39)             ( 19.39)

A05,F, 6, 9                                                                290.43               290.43*
  14978.141                                                               ( 19.39)             ( 19.39)

A03,E, 7, 9                                                                279.93               279.93*
  14437.000                                                               ( 19.39)             ( 19.39)

A01,C, 7, 9                                                                107.38               107.38*
   5538.000                                                               ( 19.39)             ( 19.39)

B13,R, 1, 3     206.93               206.93*
   9848.996    ( 21.01)             ( 21.01)

B11,R, 1, 3     237.06               237.06*
  11282.996    ( 21.01)             ( 21.01)

B09,R, 2, 4               192.93               192.93*
   9182.996              ( 21.01)             ( 21.01)

B07,R, 3, 5                          93.14                93.14*
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4432.996			(21.01)		(21.01)					
B05,R, 5, 7					52.62		52.62*			
2552.000					(21.01)		(21.01)			
B03,R, 7, 9							51.94		51.94*	
2472.000							(21.01)		(21.01)	
B01,R, 7, 9							3.59		3.59*	
171.000							(21.01)		(21.01)	
C13,R, 1, 3	190.50		190.50*							
9087.000	(21.01)		(21.01)							
C11,R, 1, 3	92.07		92.07*							
4381.996	(21.01)		(21.01)							
C09,R, 1, 3	37.50		37.50*							
1785.000	(21.01)		(21.01)							
C07,R, 2, 4		105.97		105.97*						
5043.995		(21.01)		(21.01)						
C05,R, 3, 5			19.98		19.98*					
951.000			(21.01)		(21.01)					
C03,R, 5, 7					6.22		6.22*			
285.000					(21.01)		(21.01)			
D13,R, 2, 4			125.80		125.80*					
10449.000			(12.02)		(12.02)					
D11,R, 2, 5				89.99		89.99*				
7487.000				(12.02)		(12.02)				
D09,R, 2, 5				140.18		140.18*				
11582.375				(12.02)		(12.02)				
D09,R, 4, 6					24.53		24.53*			
2040.524					(12.02)		(12.02)			
D07,R, 5, 8							186.75		186.75*	
13873.000							(12.02)		(12.02)	
D05,R, 7, 9								184.98		184.98*
15388.995								(12.02)		(12.02)
D03,R, 7, 9								324.88		324.88*
27027.995								(12.02)		(12.02)
D01,R, 7, 9								46.84		46.84*
3897.000								(12.02)		(12.02)
E13,R, 1, 3	244.78		244.78*							
13288.949	(18.45)		(18.45)							
E13,R, 1, 4		105.85		105.85*						
5737.012		(18.45)		(18.45)						
E13,R, 2, 4		5.29		5.29*						

341.037		(18.45)		(18.45)						
E11,R, 2, 4		256.56		256.56*						
14015.000		(18.45)		(18.45)						
E09,R, 2, 4		167.18		167.18*						
9050.357		(18.45)		(18.45)						
E09,R, 2, 5			176.80		176.80*					
9582.633			(18.45)		(18.45)					
E07,R, 4, 6				325.49		325.49*				
17641.995				(18.45)		(18.45)				
E05,R, 5, 7					204.70		204.70*			
11095.000					(18.45)		(18.45)			
E03,R, 7, 9							222.34		222.34*	
12050.995							(18.45)		(18.45)	
E01,R, 7, 9							324.33		324.33*	
17576.992							(18.45)		(18.45)	
F13,R, 1, 3		304.48*							304.48	
20057.986		(15.18)							(15.18)	
F11,R, 1, 3		385.74*							385.74	
25410.992		(15.18)							(15.18)	
F09,R, 1, 3		507.45*							507.45	
33429.000		(15.18)							(15.18)	
F07,R, 2, 4	329.54		329.54*							329.54
21708.996	(15.18)		(15.18)							(15.18)
F05,R, 4, 6			143.80		143.80*					
9480.000			(15.18)		(15.18)					
F03,R, 6, 8					302.42		302.42*			
18821.995					(15.18)		(15.18)			
F01,R, 7, 9						268.81		268.81*		
17707.992						(15.18)		(15.18)		
G13,R, 1, 3		160.88*							160.88	
10585.000		(15.18)							(15.18)	
G11,R, 2, 4	185.82		185.82*							185.82
12227.996	(15.18)		(15.18)							(15.18)
G09,R, 2, 4	348.61		348.61*							348.61
22984.996	(15.18)		(15.18)							(15.18)
G07,R, 2, 5		303.16		303.16*						
18970.992		(15.18)		(15.18)						
G05,R, 4, 6			57.70		57.70*					
3800.952			(15.18)		(15.18)					
G05,R, 5, 7				237.84		237.84*				

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18883.035				(15.18)		(15.18)				
G03,R, 8, 8					1111.27		1111.27*			
73205.938					(15.18)		(15.18)			
G01,R, 7, 5						80.67		80.67*		
4010.000						(15.18)		(15.18)		
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	108534.75	65567.38	46122.57	52459.41	122729.25	52030.12	64783.08	46313.89	69482.94	59801.99
M CUNITS	1872.80	1182.92	799.87	793.51	1986.80	917.43	1618.32	896.69	1398.25	863.77
HARVEST CUTS										
ACRES	0.0	69482.94	108534.75	65567.38	46122.57	52459.41	122729.25	52030.12	64783.08	46313.89
M CUNITS	0.0	1398.25	1872.80	1182.92	799.87	793.51	1986.80	917.43	1618.32	896.69
TOTAL CUTS										
ACRES	108534.75	135050.31	154657.31	118026.75	170851.81	104489.50	207522.31	98344.00	134276.00	106115.94
M CUNITS	1872.80	2581.17	2672.67	1976.43	2786.77	1710.94	3605.12	1474.12	2878.87	1420.47

* = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME
ACRES CUT

TOTAL VOLUME CUT - M CUNITS
(VOLUME CUT / ACRE - CUNITS/AC)

	21	22	23	24	25	26	27	28	29	30
A13,J, 2, 4		42.97		42.97*						
2216.000		(19.39)		(19.39)						
A11,H, 2, 5			58.62							
3023.000			(19.39)							
A09,F, 2, 5			124.54							
6423.000			(19.39)							
A07,C, 5, 7										
13617.711										
A07,C, 5, 8										
19234.281										
A05,E, 5, 8										
3884.007										
A05,F, 5, 8										
11077.848										
A05,F, 5, 9										
14578.141										
A03,E, 7, 8										
14437.000										
A01,C, 7, 9										
5538.000										
B13,R, 1, 3	206.83		206.83*							
9848.998	(21.01)		(21.01)							
B11,R, 1, 3	237.08		237.08*							
11282.998	(21.01)		(21.01)							
B09,R, 2, 4		192.83		192.83*						
9182.998		(21.01)		(21.01)						
B07,R, 3, 5			93.14							

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4432.988		(21.01)		
B05,R, 8, 7				
2552.000				
B03,R, 7, 8				
2472.000				
B01,R, 7, 8				
171.000				
C13,R, 1, 3	180.50	180.50*		
8087.000	(21.01)	(21.01)		
C11,R, 1, 3	92.07	92.07*		
4381.988	(21.01)	(21.01)		
C09,R, 1, 3	37.50	37.50*		
1785.000	(21.01)	(21.01)		
C07,R, 2, 4	105.87	105.87*		
5043.988	(21.01)	(21.01)		
C05,R, 3, 5	19.96			
951.000	(21.01)			
C03,R, 8, 7				
296.000				
D13,R, 2, 4			125.80	
10448.000			(12.02)	
D11,R, 2, 5				
7487.000				
D09,R, 2, 5				
11682.375				
D08,R, 4, 6				
2040.624				
D07,R, 5, 6				
13873.000				
D05,R, 7, 8				
15366.988				
D03,R, 7, 8				
27027.988				
D01,R, 7, 8				
3897.000				
E13,R, 1, 3	244.78	244.78*		
13266.949	(18.45)	(18.45)		
E13,R, 1, 4	105.85	105.85*		
5737.012	(18.45)	(18.45)		
E13,R, 2, 4	6.29	6.29*		

341.037	(18.45)	(18.45)		
E11,R, 2, 4	256.56	256.56*		
14015.000	(18.45)	(18.45)		
E09,R, 2, 4	167.18	167.18*		
9060.367	(18.45)	(18.45)		
E09,R, 2, 5		176.80		
9582.633		(18.45)		
E07,R, 4, 6			325.49	
17641.988			(18.45)	
E05,R, 5, 7				
11095.000				
E03,R, 7, 8				
12080.988				
E01,R, 7, 8				
17678.992				
F13,R, 1, 3	304.48*			
20087.988	(15.18)			
F11,R, 1, 3	388.74*			
25410.992	(15.18)			
F09,R, 1, 3	507.45*			
33428.000	(15.18)			
F07,R, 2, 4	329.54*			
21708.988	(15.18)			
F05,R, 4, 6	143.60	143.60*		
9460.000	(15.18)	(15.18)		
F03,R, 6, 8			302.42	
19821.988			(15.18)	
F01,R, 7, 8				
17707.992				
G13,R, 1, 3	180.68*			
10585.000	(15.18)			
G11,R, 2, 4	185.82*			
12227.988	(15.18)			
G09,R, 2, 4	348.61*			
22984.988	(15.18)			
G07,R, 2, 5	303.18	303.18*		
18970.992	(15.18)	(15.18)		
G05,R, 4, 6	57.70	57.70*		
3800.992	(15.18)	(15.18)		
G08,R, 5, 7		237.84		

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  15666.039                          ( 15.18)

 G03,R, 6, 8                                  1111.27
   73205.938                                  ( 15.18)

 G01,R, 7, 8
    4010.000

OVERSTORY REMOVAL CUTS
  ACRES            0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0
  M CUNITS         0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0

INTERMEDIATE CUTS
  ACRES        69603.88  58857.35  40080.65 121218.88       0.0       0.0       0.0       0.0       0.0       0.0
  M CUNITS      1311.98   1081.06    710.92   1864.77       0.0       0.0       0.0       0.0       0.0       0.0

HARVEST CUTS
  ACRES        89482.94  56901.99  69603.88  58857.35       0.0       0.0       0.0       0.0       0.0       0.0
  M CUNITS      1358.35    863.77   1311.98   1081.06       0.0       0.0       0.0       0.0       0.0       0.0

TOTAL CUTS
  ACRES       159086.81 115759.31 109684.50 180076.19       0.0       0.0       0.0       0.0       0.0       0.0
  M CUNITS      2670.34   1944.83   2022.90   2945.83       0.0       0.0       0.0       0.0       0.0       0.0

* = OVERSTORY REMOVAL CUT;    * = HARVEST CUT
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                                    NCFI TIMBER RAM ANALYSIS
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OBJECTIVE' TVL03  -  HARVEST VOLUME    OPTIMIZED THROUGH PERIOD  9
            TOTAL OBJECTIVE VALUE =     21749.21  (UNITS = M CUNITS)

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                                        *                         *
                                        *    OBJECTIVE REPORT     *
                                        *                         *
                                        ***************************

                 ACTIVITY NAME   ACRES CUT    OBJECTIVE VALUE          OBJECTIVE VALUE/ACRE
                                              (UNITS =M CUNITS)          (UNITS =  CUNITS/ACRE)

                  A13,J, 2, 4      2216.00        119.97                      54.14
                  A11,H, 2, 5      3023.00        152.81                      50.55
                  A09,F, 2, 5      6423.00        290.45                      45.22
                  A07,G, 5, 7     13617.71        637.04                      46.78
                  A07,G, 5, 8     19234.28        923.05                      47.99
                  A05,E, 5, 9      3894.01        180.58                      43.47
                  A05,F, 6, 8     11077.85        486.43                      43.91
                  A05,F, 6, 9     14978.14        677.31                      45.22
                  A03,E, 7, 9     14437.00        588.31                      40.75
                  A01,C, 7, 9      5538.00        184.42                      33.30
                  B13,R, 1, 3      9849.00        404.20                      41.04
                  B11,R, 1, 3     11283.00        447.26                      39.64
                  B09,R, 2, 4      9183.00        351.98                      38.33
                  B07,R, 3, 5      4433.00        161.72                      36.48
                  B05,R, 5, 7      2552.00         93.10                      36.48
                  B03,R, 7, 9      2472.00         90.18                      36.48
                  B01,R, 7, 9       171.00          5.24                      30.62
                  C13,R, 1, 3      9067.00        262.67                      28.97
                  C11,R, 1, 3      4382.00        121.66                      27.74
                  C09,R, 1, 3      1785.00         47.36                      26.53
                  C07,R, 2, 4      5044.00        130.08                      25.79
                  C05,R, 3, 5       951.00         23.57                      24.78
                  C03,R, 5, 7       296.00          7.33                      24.78
                  D13,R, 2, 4     10449.00        332.70                      31.84
                  D11,R, 2, 5      7487.00        222.51                      29.72
                  D09,R, 2, 5     11662.38        307.77                      26.39
                  D09,R, 4, 6      2040.62         59.34                      29.08
                  D07,R, 5, 8     13873.00        390.66                      28.16
                  D05,R, 7, 9     15389.00        422.27                      27.44
                  D03,R, 7, 9     27028.00        633.27                      23.43
                  D01,R, 7, 9      3897.00         68.78                      17.65
                  E13,R, 1, 3     13266.95        594.09                      44.78
                  E13,R, 1, 4      5737.01        260.40                      45.39
                  E13,R, 2, 4       341.04         15.73                      46.13
                  E11,R, 2, 4     14015.00        606.43                      43.27
                  E09,R, 2, 4      9060.37        359.33                      39.66
                  E09,R, 2, 5      9582.63        388.00                      40.49
                  E07,R, 4, 6     17842.00        699.68                      39.66
                  E05,R, 5, 7     11095.00        415.17                      37.42
                  E03,R, 7, 9     12051.00        450.95                      37.42
                  E01,R, 7, 9     17578.99        552.51                      31.43
                  F13,R, 1, 3     20058.00        610.97                      30.46
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F11,R, 1, 3	25410.93	815.85	32.15		
F09,R, 1, 3	33429.00	1086.05	31.89		
F07,R, 2, 4	21709.00	686.64	30.80		
F05,R, 4, 6	8480.00	291.37	30.80		
F03,R, 6, 8	19822.00	585.71	29.40		
F01,R, 7, 9	17707.83	485.73	27.43		
C13,R, 1, 3	10585.00	280.23	33.84		
C11,R, 2, 4	12224.00	281.12	22.99		
C09,R, 2, 4	22955.00	492.63	21.45		
C07,R, 2, 5	15870.99	396.22	15.99		
C05,R, 4, 6	3800.55	73.58	19.38		
C05,R, 5, 7	18688.04	321.35	20.51		
C03,R, 6, 8	73205.94	2152.26	29.40		
C01,R, 7, 9	4010.00	108.59	27.43		

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TYL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21749.21 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2277.86 M CUNITS/DECADE

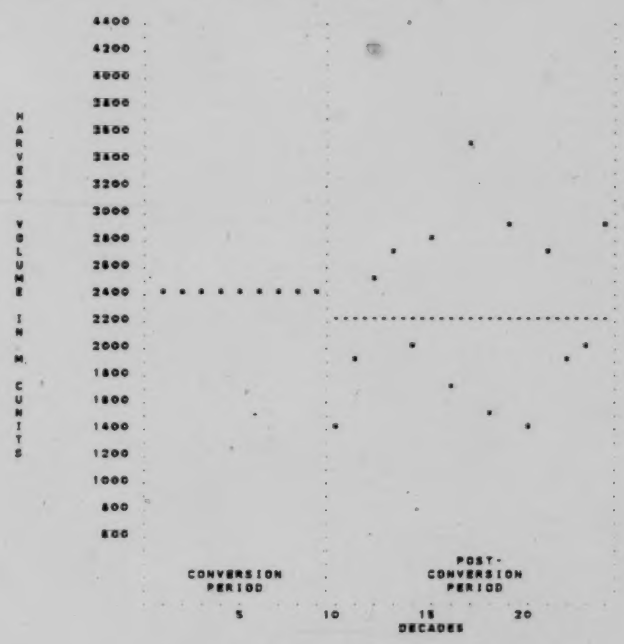
AVERAGE OF POST-CONVERSION PERIODIC HARVESTS=, 2249.28 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	144853.	2416.59	2416.59	0.	0.0	0.0	144853.	2416.59	2416.59
2	0.	0.0	0.0	185389.	2416.59	4833.18	0.	0.0	0.0	185389.	2416.59	4833.18
3	0.	0.0	0.0	5384.	87.45	4920.63	139116.	2328.14	2329.14	144500.	2416.59	7249.78
4	0.	0.0	0.0	32944.	533.48	5454.07	112947.	1883.14	4212.28	145891.	2416.59	9666.36
5	0.	0.0	0.0	40030.	1365.88	6819.95	83532.	1060.71	5262.98	143563.	2416.59	12082.93
6	0.	0.0	0.0	118184.	1825.88	8645.83	32944.	580.81	5843.79	151127.	2416.59	14499.52
7	0.	0.0	0.0	120280.	1837.11	10263.04	43229.	779.48	6623.07	163509.	2416.59	16916.11
8	0.	0.0	0.0	0.	0.0	10263.04	137313.	2416.59	9040.65	137313.	2416.59	19332.69
9	0.	0.0	0.0	0.	0.0	10263.04	138982.	2416.59	11456.24	138982.	2416.59	21749.28
10	0.	0.0	0.0	89483.	1358.35	11841.39	0.	0.0	11456.24	89483.	1358.35	23107.63
11	0.	0.0	0.0	106535.	1872.80	13513.96	0.	0.0	11456.24	106535.	1872.80	24980.22
12	0.	0.0	0.0	85587.	1182.92	14696.89	89483.	1358.35	12824.59	185050.	2541.27	27521.48
13	0.	0.0	0.0	48123.	789.97	15486.87	106535.	1872.80	14697.16	154657.	2672.57	30194.05
14	0.	0.0	0.0	52459.	783.51	16290.38	85587.	1182.92	15880.08	118027.	1976.43	32170.48
15	0.	0.0	0.0	122729.	1966.80	18257.17	48123.	789.97	16680.07	170852.	2756.77	34927.25
16	0.	0.0	0.0	52030.	917.43	19174.60	52459.	793.51	17473.57	104490.	1710.94	36648.19
17	0.	0.0	0.0	84793.	1518.32	20692.92	122729.	1966.80	19440.37	207522.	3485.12	40133.30
18	0.	0.0	0.0	46314.	556.69	21249.61	52030.	917.43	20357.80	98344.	1474.12	41607.43
19	0.	0.0	0.0	89483.	1358.35	22607.96	84793.	1518.32	21876.12	174276.	2876.67	44484.10
20	0.	0.0	0.0	56902.	863.77	23471.73	46314.	556.69	22432.81	103216.	1420.47	45904.56
21	0.	0.0	0.0	89604.	1311.88	24783.71	89483.	1358.35	23791.16	179087.	2670.24	48574.89
22	0.	0.0	0.0	58857.	1081.08	25864.77	56902.	863.77	24654.93	115759.	1944.83	50519.72
23	0.	0.0	0.0	40081.	710.82	26575.58	89604.	1311.88	25966.81	109685.	2022.90	52542.62
24	0.	0.0	0.0	121219.	1864.77	28440.45	58857.	1081.08	27047.98	180076.	2945.83	55488.45

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 5



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

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17. Appendix 5: Density Control Assimilation and Printouts

This study is mainly interested in the saw timber component of the forest. Johnstone (1981) found that for this component, the most effective treatments were:

"Treatment 3" – 1.8 x 1.8 m. spacing rethinned 15 years later

"Treatment 4" – 2.4 x 2.4 m. spacing, and

"Treatment 5" – 3.7 x 3.7 m. spacing.

Therefore the means of the volume increments for the 500 "crop trees" of treatments 3,4, and 5 were compared to the controls. The figures were processed in the following manner (see Table A.18):

Table A.18: Derivation of Density Control Increments

Treat. No.	Init. vol.	Inc.	5 yr. vol.	Inc.	10 yr. vol.	Inc.	15 yr. vol.	Inc.	20 yr. vol.	Inc.	25 yr. vol.
3	8.1	6.3	14.4	14.5	28.9	15.5	44.4	20.6	65.0	16.7	81.7
4	6.1	5.3	11.4	11.9	23.3	12.3	35.6	19.7	55.3	16.4	71.7
5	6.1	3.9	10.0	13.1	23.1	13.6	36.7	24.4	61.1	16.7	77.8
Control	5.0	2.8	7.8	6.4	14.2	6.9	21.1	9.5	30.6	7.7	38.3
Mean (3,4,&5)		5.1		13.2		13.8		21.6		16.6	
Mean Volumes	6.8		11.9		25.1		38.9		60.5		77.1
Increment Increase over Control		2.3		6.8		6.9		12.1		8.9	

1. At each five year interval, the mean increment of treatments 3,4, and 5 was calculated. The difference between this mean increment and the control increment was calculated, to obtain an "increment increase over control."
2. Since 10 year responses were required, the 5 year responses were summed to obtain the 10 year responses as follows:

   0 –5 year response plus 5 – 10 year response,

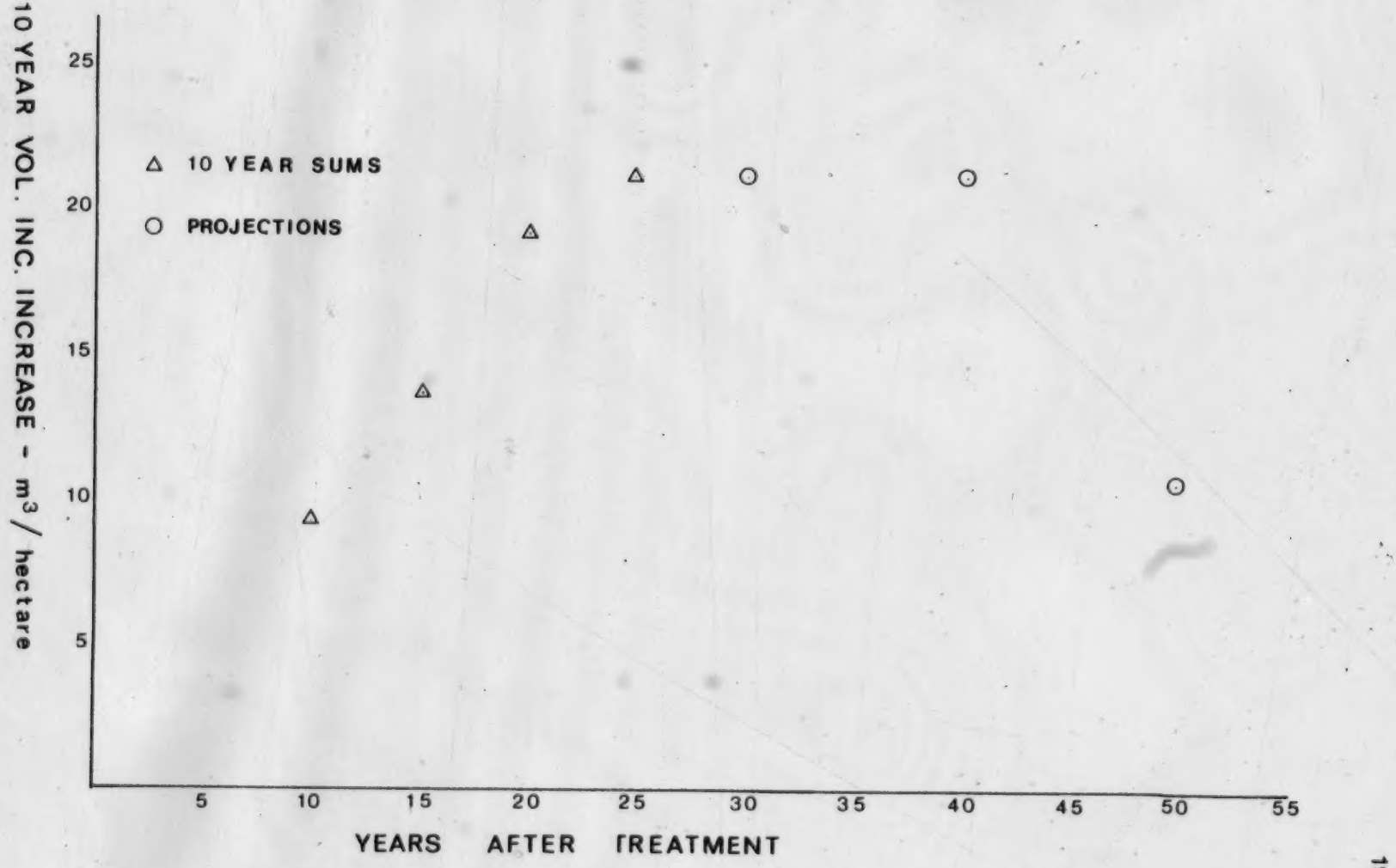
   5 – 10 year response plus 10 – 15 year response,

   10 – 15 year response plus 15 – 20 year response,

   15 – 20 year response plus 20 – 25 year response.

   A plot of the summations is given in Figure 1 below.

Figure 1: 10 Year Expected Increment Increases After Density Control in Overstocked Lodgepole Pine Stands



The results of the 10 year summations are:

9.2 m^3 / ha. increased increment at 10 years,

13.7m^3 / ha. at 15 years,

19.0m^3/ha. at 20 years, and

21.0m^3 / ha. at 25 years

It was assumed that the trend would continue until 40 years after treatment, and then diminish. Therefore, the increment increases were:

21.0 m^3 / ha., at 30 year,

21.0 m^3 / ha. at 40 years,

10.5 m^3 / ha. at 50 years, and

0.0 at 60 years.

As mentioned earlier, approximately one half (10,000 acres) of the 10 and 30 year old lodgepole pine stands are overstocked, and approximately one half (5000 acres) of these stands are being considered for treatment. Since no firm figures were available as to the proportion of doghair pine within each age class (10 and 30), it was assumed that half of the acreage in the 10 year old pine class was overstocked, and half of the acreage in the 30 year old pine class was overstocked.

Application to Timber RAM

Appendix 5, Run N36A provides the input data required for the density control study. Two additional volume classes were used to incorporate the volume increases due to spacing; one for the 10 year old pine stands and one for the 30 year old pine stands.

Table A.19 demonstrates how the volume figures for the treated 10 year old stand of lodgepole pine (Volume class 10 in Run N36A) were derived. At age 50, the age at which the trees become measurable, the treated portion of the 10 year old stand has undergone four decades of increased volume growth due to spacing. Since the increased growth may only apply to 25% of the stand, the total four- decade volume increases were quartered. The conversion factor (c = 0.142913) translates m^3 / ha. figures into cunits / acre, used in this study.

Table A.19: Derivation of Volume Class 10, Run N36

Treated 10 year old lodgepole pine Stands

Age	Volume	Increase ($m.^3$ / ha.)	Quartered Increase (Cunits/ac.)	Final Volume
10	x_{10}	0.0	0.0	–
20	x_{20}	9.2	0.33	–
30	x_{30}	9.2+19.0	1.01	–
40	x_{40}	9.2+19.0+21.0	1.76	–
50	16.91	9.2+19.0+21.0+21.0	2.51	19.42
60	22.85	9.2+19.0+21.0+21.0+11.5	2.88	25.73

(Treated 10 – year old Lodgepole pine stands).

Since no increase in volume increment was assumed after the fifth post–treatment decade, the total quartered five decade volume increase of 2.88 cunits / acre was simply added onto the original predicted volumes for the lodgepole pine class, for ages 60 to 180.

The same procedure was used for the simulated treatment of 30 year old lodgepole pine stands, with the initial increment occuring in the fourth decade (see Volume Class 9 in Appendix 5, Run N36). Since the effect of thinning is assumed to diminish to zero after the fifth post – treatment decade, the total quartered effect of 2.88 cunits / acre was added onto the original predicted volumes, for ages 80 to 180.

The two extra volume classes (9 and 10) were added to the data set used for the base run. The treated stands (A01 and A03) were assigned to Volume classes 10 and 9 respectively.

1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN N38A, NEW YIELD TABLES,FIR REG WS
ALT C. CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, MAY 27,1982.

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2000.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 9
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 16

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER AND UPPER BOUNDS

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

CONVERSION PERIOD	LOWER	UPPER
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.062
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAG*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE' IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED'

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	6	1	2	8	24		

NOTE' IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5. TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	2.218	1.00				
A11		11	L	3.023	1.00				
A09		9	L	6.423	1.00				
A07		7	L	32.852	1.00				
A05		5	L	29.750	1.00				
A03		3	L	14.437	1.00				
A01		1	L	5.538	1.00				
B13		13	L	9.849	1.00				
B11		11	L	11.283	1.00				
B09		9	L	8.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.552	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	9.087	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.785	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.851	1.00				
C03		3	L	0.296	1.00				
D13		13	L	10.449	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	12.873	1.00				
D05		5	L	15.389	1.00				
D03		3	L	27.028	1.00				
D01		1	L	3.897	1.00				
E13		13	L	19.345	1.00				
E11		11	L	14.015	1.00				
E09		9	L	16.843	1.00				
E07		7	L	17.842	1.00				
E05		5	L	11.095	1.00				
E03		3	L	12.051	1.00				
E01		1	L	17.578	1.00				
F13		13	L	20.058	1.00				
F11		11	L	25.411	1.00				
F09		9	L	33.428	1.00				
F07		7	L	21.708	1.00				
F05		5	L	9.460	1.00				
F03		3	L	19.922	1.00				
F01		1	L	17.706	1.00				
G13		13	L	10.585	1.00				
G11		11	L	12.228	1.00				
G09		9	L	22.865	1.00				
G07		7	L	19.871	1.00				
G05		5	L	19.468	1.00				
G03		3	L	73.206	1.00				
G01		1	L	4.010	1.00				

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 666.031 THOUSAND ACRES

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6. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT CODES REC	MGMT CODES NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF IMP SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	R		1	0	-1	1	1	4	3	6	3	5
A11	R		1	0	-1	1	1	8	3	8	3	5
A09	R		1	0	-1	1	1	8	3	10	3	5
A07	R		1	0	-1	1	1	10	3	12	3	5
A05	R		1	0	-1	1	3	12	5	14	3	5
A03	R		1	0	-1	1	5	14	7	16	3	5
A01	R		10	0	-1	1	7	16	9	18	3	5
B13	R		2	0	-1	1	1	4	3	6	3	5
B11	R		2	0	-1	1	1	6	3	8	3	5
B09	R		2	0	-1	1	1	8	3	10	3	5
B07	R		2	0	-1	1	1	10	3	12	3	5
B05	R		2	0	-1	1	3	12	5	14	3	5
B03	R		2	0	-1	1	5	14	7	16	3	5
B01	R		2	0	-1	1	7	16	9	18	3	5
C13	R		3	0	-1	1	1	4	3	6	3	5
C11	R		3	0	-1	1	1	6	3	8	3	5
C09	R		3	0	-1	1	1	8	3	10	3	5
C07	R		3	0	-1	1	1	10	3	12	3	5
C05	R		3	0	-1	1	3	12	5	14	3	5
C03	R		3	0	-1	1	5	14	7	16	3	5
D13	R		4	0	-1	1	1	4	3	6	3	5
D11	R		4	0	-1	1	1	6	3	8	3	5
D09	R		4	0	-1	1	1	8	3	10	3	5
D07	R		4	0	-1	1	1	10	3	12	3	5
D05	R		4	0	-1	1	3	12	5	14	3	5
D03	R		4	0	-1	1	5	14	7	16	3	5
D01	R		4	0	-1	1	7	16	9	18	3	5
E13	R		5	0	-1	1	1	4	3	6	3	5
E11	R		5	0	-1	1	1	6	3	8	3	5
E09	R		5	0	-1	1	1	8	3	10	3	5
E07	R		5	0	-1	1	1	10	3	12	3	5
E05	R		5	0	-1	1	3	12	5	14	3	5
E03	R		5	0	-1	1	5	14	7	16	3	5
E01	R		5	0	-1	1	7	16	9	18	3	5
F13	R		7	0	-1	1	1	4	3	6	3	5
F11	R		7	0	-1	1	1	6	3	8	3	5
F09	R		7	0	-1	1	1	8	3	10	3	5
F07	R		7	0	-1	1	1	10	3	12	3	5
F05	R		7	0	-1	1	3	12	5	14	3	5
F03	R		8	0	-1	1	5	14	7	16	3	5
F01	R		8	0	-1	1	7	16	9	18	3	5
G13	R		6	0	-1	1	1	4	3	6	3	5
G11	R		6	0	-1	1	1	6	3	8	3	5
G09	R		6	0	-1	1	1	8	3	10	3	5
G07	R		6	0	-1	1	1	10	3	12	3	5
G05	R		6	0	-1	1	3	12	5	14	3	5
G03	R		8	0	-1	1	5	14	7	16	3	5
G01	R		8	0	-1	1	7	16	9	18	3	5

7. VOLUME DATA

VOL CLASS 1 (PINE 6/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	18.89	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	18.89	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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VDL CLASS 2 (WHITE SPRUCE 6/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.26	0.0	5.26	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	0.0	0.0
8	15.58	0.0	15.58	0.0	21.01	0.0
9	17.18	0.0	17.18	0.0	0.0	0.0
10	18.40	0.0	18.40	0.0	21.01	0.0
11	19.28	0.0	19.28	0.0	0.0	0.0
12	19.83	0.0	19.83	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.80	0.0	20.80	0.0	0.0	0.0
15	20.89	0.0	20.89	0.0	0.0	0.0
16	20.85	0.0	20.85	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VDL CLASS 3 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.26	0.0	7.26	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	0.0	0.0
8	12.51	0.0	12.51	0.0	21.01	0.0
9	12.95	0.0	12.85	0.0	0.0	0.0
10	13.28	0.0	13.28	0.0	21.01	0.0
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.18	0.0	15.18	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

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VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.02	0.0
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.88	0.0	12.88	0.0	12.02	0.0
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

VOL CLASS 5 (SW-PL 6/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 16

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	6.15	0.0	6.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.81	0.0	0.0	0.0
8	15.95	0.0	15.85	0.0	18.45	0.0
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	18.45	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

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VOL CLASS 6 (HS 6/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	0.0	0.0
7	8.21	0.0	8.21	0.0	15.18	0.0
8	9.08	0.0	9.08	0.0	0.0	0.0
9	9.76	0.0	9.76	0.0	15.18	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.76	0.0	10.76	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 7 (SH 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	0.0	0.0
7	13.30	0.0	13.30	0.0	15.18	0.0
8	14.89	0.0	14.89	0.0	0.0	0.0
9	15.80	0.0	15.80	0.0	15.18	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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VOL CLASS 8 (MW 6/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.84	0.0	7.84	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	0.0	0.0
7	12.82	0.0	12.82	0.0	15.18	0.0
8	13.88	0.0	13.88	0.0	0.0	0.0
9	14.81	0.0	14.81	0.0	15.18	0.0
10	15.52	0.0	15.52	0.0	0.0	0.0
11	16.08	0.0	16.08	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.99	0.0	16.99	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.25	0.0	17.25	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

VOL CLASS 9 (SPACED PINE 8/4)
CLASS NUMBER 9

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.96	0.0	8.96	0.0	0.0	0.0
6	12.31	0.0	12.31	0.0	0.0	0.0
7	15.19	0.0	15.19	0.0	0.0	0.0
8	17.55	0.0	17.55	0.0	18.59	0.0
9	18.47	0.0	18.47	0.0	0.0	0.0
10	21.19	0.0	21.19	0.0	18.59	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.18	0.0	24.18	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.78	0.0	27.78	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.76	0.0	30.76	0.0	0.0	0.0

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VDL CLASS 10 (SPACED PINE 6/4)
CLASS NUMBER 10

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	9.71	0.0	9.71	0.0	0.0	0.0
6	12.87	0.0	12.87	0.0	0.0	0.0
7	15.36	0.0	15.36	0.0	0.0	0.0
8	17.55	0.0	17.55	0.0	18.88	0.0
9	19.47	0.0	19.47	0.0	0.0	0.0
10	21.19	0.0	21.19	0.0	18.59	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.15	0.0	24.15	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.79	0.0	27.79	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.78	0.0	30.78	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N38A, NEW YIELD TABLES,FIR REG WS
ALT. C. CUT, REGEN=10 YR LAG,4% CULL,NORMAL STOCKING, MAY 27,1982.

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CASE OUTPUT=R

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	1	2	3	4	5	6	7	8	9	10
A13,R, 2, 4 2216.000		55.81 (25.23)		80.74* (27.41)						
A11,R, 2, 5 3023.000		68.68 (22.72)			79.66* (26.35)					
A09,R, 2, 5 6423.000		120.85 (18.75)			154.28* (24.02)					
A07,R, 5, 7 5066.695					107.82 (21.30)		121.70* (24.02)			
A07,R, 5, 8 27765.309					591.83 (21.30)			701.02* (25.23)		
A05,R, 5, 8 11501.012						227.15 (19.75)		261.30* (22.72)		
A05,R, 5, 9 10836.785						214.03 (19.75)			260.30* (24.02)	
A05,R, 7, 9 7412.195							157.68 (21.30)		178.04* (24.02)	
A03,R, 7, 9 14437.000							281.08 (19.47)		328.30* (22.74)	
A01,R, 7, 9 6538.000							85.17 (15.38)		107.82* (19.47)	
B13,R, 1, 3 9848.936	200.43 (20.35)		203.78* (20.69)							
B11,R, 1, 3 11262.998	217.65 (19.29)		228.61* (20.36)							
B09,R, 2, 4 9162.996		168.87 (18.40)		183.02* (19.83)						
B07,R, 3, 5			78.20		85.51*					

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4432.998			(17.19)		(19.29)							
B05,R, 5, 7 2552.000					43.87 (17.19)		49.23* (19.29)					
B03,R, 7, 9 2472.000							42.48 (17.19)		47.68* (19.29)			
B01,R, 7, 9 171.000							2.30 (13.43)		2.94* (17.19)			
C13,R, 1, 3 9067.000	128.39 (14.16)		134.28* (14.81)									
C11,R, 1, 3 4361.998	59.51 (13.58)		62.08* (14.16)									
C09,R, 1, 3 1788.000	23.12 (12.95)		24.24* (13.58)									
C07,R, 2, 4 8043.998		83.10 (12.51)		86.98* (13.26)								
C05,R, 3, 5 961.000			11.25 (11.83)		12.32* (12.95)							
C03,R, 5, 7 298.000					3.56 (11.83)		3.83* (12.95)					
D13,R, 2, 4 10448.000		159.87 (15.30)		172.83* (16.84)								
D11,R, 2, 5 7487.000		103.17 (13.78)			119.34* (15.94)							
D09,R, 2, 5 10848.129		128.12 (11.81)			158.17* (14.58)							
D08,R, 3, 5 2854.859			35.71 (12.66)		41.62* (14.58)							
D07,R, 5, 7 13873.000					175.41 (12.66)		202.27* (14.58)					
D05,R, 7, 9 15368.998							197.90 (12.86)		224.37* (14.58)			
D03,R, 7, 9 27027.998							285.68 (10.57)		347.58* (12.86)			
D01,R, 7, 9 3897.000							27.58 (7.08)		41.19* (10.57)			
E13,R, 1, 3 9586.168	207.83 (21.68)		221.44* (23.10)									
E13,R, 1, 4 9006.457	195.26 (21.68)			213.54* (23.71)								
E13,R, 2, 4		16.87		17.84*								

782.371		(22.42)		(23.71)								
E11,R, 2, 4 14015.000		292.21 (20.85)		314.22* (22.42)								
E09,R, 3, 4 18348.016		345.07 (18.81)		382.49* (20.85)								
E08,R, 2, 5 287.867		5.81 (18.81)			8.45* (21.88)							
E07,R, 3, 5 2248.856			38.39 (17.52)		44.75* (19.90)							
E07,R, 4, 6 15393.441				288.95 (18.81)		320.95* (20.85)						
E05,R, 5, 7 11085.000					194.38 (17.52)		220.78* (19.90)					
E03,R, 7, 9 12050.998							211.13 (17.52)		239.81* (19.90)			
E01,R, 7, 9 17578.992							244.83 (13.91)		307.98* (17.52)			
F13,R, 1, 3 20057.998	318.12 (15.86)		292.85* (14.60)								304.48 (15.18)	
F11,R, 1, 3 25410.992	413.94 (16.28)		403.02* (15.86)								385.74 (15.18)	
F09,R, 1, 3 33429.000	521.48 (15.80)		544.59* (16.29)								507.45 (15.18)	
F07,R, 2, 4 21708.998		318.91 (14.69)		348.73* (16.11)								
F05,R, 4, 6 8460.000				138.97 (14.69)		152.40* (16.11)						
F03,R, 6, 8 13921.998						276.52 (13.88)		309.19* (15.52)				
F01,R, 7, 8 17707.992							223.47 (12.62)		262.29* (14.81)			
G13,R, 1, 3 10585.000	121.84 (11.52)		128.29* (12.12)								160.68 (15.18)	
G11,R, 2, 4 3484.403		38.66 (11.15)		40.98* (11.83)								
G11,R, 2, 5 8763.594		97.60 (11.15)			108.21* (12.12)							
G09,R, 2, 5 22984.998		236.84 (10.30)			264.88* (11.52)							
G07,R, 2, 5		181.34			214.89*							

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19970.992		(9.08)			(10.78)					
G05,R, 4, 6				175.78		200.53*				
19468.992				(9.08)		(10.30)				
G03,R, 6, 8						1015.10		1138.18*		
73205.938						(13.88)		(15.52)		
G01,R, 7, 9							50.61		59.39*	
4010.000							(12.62)		(14.81)	
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	144441.50	184956.13	10487.41	44322.43	90668.00	115485.69	127592.00	0.0	0.0	89482.94
M CUNITS	2407.67	2407.67	163.58	605.30	1119.91	1733.78	1809.85	0.0	0.0	1358.35
HARVEST CUTS										
ACRES	0.0	0.0	135435.05	94184.13	90266.00	44322.43	32882.70	132414.25	138528.75	0.0
M CUNITS	0.0	0.0	2244.11	1802.38	1287.76	673.88	597.82	2407.67	2407.67	0.0
TOTAL CUTS										
ACRES	144441.50	184956.13	145922.44	138506.50	150934.00	159788.06	160574.69	132414.25	138528.75	89482.94
M CUNITS	2407.67	2407.67	2407.67	2407.67	2407.67	2407.67	2407.67	2407.67	2407.67	1358.35

* = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	11	12	13	14	15	16	17	18	19	20
					TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)					
A13,R, 2, 4		41.42		41.42*						
2216.000		(18.69)		(18.69)						
A11,R, 2, 5			56.50		56.50*					
3023.000			(18.69)		(18.69)					
A09,R, 2, 5			120.05		120.05*					
6423.000			(18.69)		(18.69)					
A07,R, 5, 7					94.70		94.70*			
5066.695					(18.69)		(18.69)			
A07,R, 5, 8						519.31		519.31*		
27785.309						(18.69)		(18.69)		
A05,R, 6, 9						214.95		214.95*		
11501.012						(18.69)		(18.69)		
A05,R, 6, 9							202.54		202.54*	
10836.785							(18.69)		(18.69)	
A05,R, 7, 9							138.53		138.53*	
7412.195							(18.69)		(18.69)	
A03,R, 7, 9							269.83		269.83*	
14437.000							(18.69)		(18.69)	
A01,R, 7, 9							103.51		103.51*	
5538.000							(18.69)		(18.69)	
B13,R, 1, 3	206.93		206.93*							
9848.996	(21.01)		(21.01)							
B11,R, 1, 3	237.06		237.06*							
11282.996	(21.01)		(21.01)							
B09,R, 2, 4		192.93		192.93*						
9182.996		(21.01)		(21.01)						
B07,R, 3, 5			93.14		93.14*					

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4432.996			(21.01)		(21.01)							
B05,R, 5, 7 2952.000					53.62 (21.01)		53.62* (21.01)					
B03,R, 7, 9 2472.000							51.94 (21.01)		51.94* (21.01)			
B01,R, 7, 9 171.000							3.59 (21.01)		3.59* (21.01)			
C13,R, 1, 3 9087.000	190.50 (21.01)		190.50* (21.01)									
C11,R, 1, 3 4361.996	92.07 (21.01)		92.07* (21.01)									
C09,R, 1, 3 1785.000	37.50 (21.01)		37.50* (21.01)									
C07,R, 2, 4 5043.996		105.87 (21.01)		105.87* (21.01)								
C05,R, 3, 5 951.000			19.98 (21.01)		19.98* (21.01)							
C03,R, 5, 7 296.000					6.22 (21.01)		6.22* (21.01)					
D13,R, 2, 4 10448.000			125.80 (12.02)		125.80* (12.02)							
D11,R, 2, 5 7467.000				89.89 (12.02)		89.89* (12.02)						
D09,R, 2, 5 10848.128				130.39 (12.02)		130.39* (12.02)						
D09,R, 3, 5 2864.869				34.32 (12.02)		34.32* (12.02)						
D07,R, 5, 7 13873.000					166.75 (12.02)		166.75* (12.02)					
D05,R, 7, 9 15388.996							184.96 (12.02)		184.96* (12.02)			
D03,R, 7, 9 27027.996							324.88 (12.02)		324.88* (12.02)			
D01,R, 7, 9 3897.000							46.84 (12.02)		46.84* (12.02)			
E13,R, 1, 3 9586.168	176.88 (18.45)		176.88* (18.45)									
E12,R, 1, 4 9006.457		166.17 (18.45)		166.17* (18.45)								
E12,R, 2, 4		13.88		13.88*								

752.371		(18.45)		(18.45)								
E11,R, 2, 4 14015.000		258.58 (18.45)		258.58* (18.45)								
E09,R, 2, 4 18345.016		338.47 (18.45)		338.47* (18.45)								
E09,R, 2, 5 297.987			5.50 (18.45)		5.50* (18.45)							
E07,R, 3, 5 2248.596			41.48 (18.45)		41.48* (18.45)							
E07,R, 4, 5 15393.441				284.01 (18.45)		284.01* (18.45)						
E05,R, 5, 7 11085.000					204.70 (18.45)		204.70* (18.45)					
E03,R, 7, 9 12050.996							222.34 (18.45)		222.34* (18.45)			
E01,R, 7, 9 17576.992							324.33 (18.45)		324.33* (18.45)			
F13,R, 1, 3 20057.996		304.48* (15.18)							304.48 (15.18)			
F11,R, 1, 3 25410.992		385.74* (15.18)							385.74 (15.18)			
F09,R, 1, 3 33429.000		507.45* (15.18)							507.45 (15.18)			
F07,R, 2, 4 21708.996	329.54 (15.18)		329.54* (15.18)								329.54 (15.18)	
F05,R, 4, 6 9480.000			143.80 (15.18)		143.80* (15.18)							
F03,R, 6, 8 19921.996					302.42 (15.18)		302.42* (15.18)					
F01,R, 7, 9 17707.992						268.81 (15.18)		268.81* (15.18)				
G13,R, 1, 3 10585.000		160.68* (15.18)							160.68 (15.18)			
G11,R, 2, 4 3484.403	52.89 (15.18)		52.89* (15.18)								52.89 (15.18)	
G11,R, 2, 5 8763.594		133.03 (15.18)		133.03* (15.18)								
G09,R, 2, 6 22864.996		348.81 (15.18)		348.81* (15.18)								
G07,R, 2, 6		303.16		303.16*								

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19376.992		(15.18)		(15.18)						
G05,R, 4, 5			295.54		295.54*					
19468.992			(15.18)		(15.18)					
G03,R, 6, 5				1111.27		1111.27*				
73206.938				(15.18)		(15.18)				
G01,R, 7, 5					80.87		80.87*			
4010.000					(15.18)		(15.18)			
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	71125.50	110261.25	86784.52	38563.44	112137.63	74877.31	70486.94	46313.89	89482.94	25173.40
M CUNITS	1322.05	1902.22	901.39	536.71	1772.92	1230.89	1316.81	556.69	1358.35	382.13
HARVEST CUTS										
ACRES	0.0	89482.94	71125.50	110261.25	86754.52	38563.44	112137.63	74877.31	70486.94	46313.89
M CUNITS	0.0	1358.35	1322.05	1902.22	901.39	536.71	1772.92	1230.89	1316.81	556.69
TOTAL CUTS										
ACRES	71125.50	199744.19	127880.00	148844.69	198892.13	111480.75	182624.56	121191.25	159979.88	71487.28
M CUNITS	1322.05	3260.57	2224.43	2440.93	2674.30	1769.61	3089.53	1787.38	2674.96	938.83

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME — TOTAL VOLUME CUT - M CUNITS
ACRES CUT — (VOLUME CUT / ACRE - CUNITS/AC)

	21	22	23	24	25	26	27	28	29	30
A13,R, 2, 4		41.42		41.42*						
2218.000		(18.69)		(18.69)						
A11,R, 2, 5			58.50							
3023.000			(18.69)							
A09,R, 2, 5			120.05							
6423.000			(18.69)							
A07,R, 5, 7										
5068.695										
A07,R, 5, 8										
27785.309										
A05,R, 5, 8										
11501.012										
A05,R, 6, 9										
10835.785										
A05,R, 7, 8										
7412.195										
A03,R, 7, 9										
14437.000										
A01,R, 7, 9										
5838.000										
B13,R, 1, 3	206.83		206.83*							
9848.996	(21.01)		(21.01)							
B11,R, 1, 3	237.06		237.06*							
11282.996	(21.01)		(21.01)							
B09,R, 2, 4		182.93		182.93*						
9182.996		(21.01)		(21.01)						
B07,R, 3, 5			93.14							

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4432.996		(21.01)		
B05,R, 9, 7 2582.000				
B03,R, 7, 9 2472.000				
B01,R, 7, 9 171.000				
C12,R, 1, 3 9067.000	190.50 (21.01)		190.50* (21.01)	
C11,R, 1, 3 4381.996	92.07 (21.01)		92.07* (21.01)	
C09,R, 1, 3 1785.000	37.50 (21.01)		37.50* (21.01)	
C07,R, 2, 4 5043.996		105.97 (21.01)	105.97* (21.01)	
C05,R, 3, 5 951.000			19.98 (21.01)	
C03,R, 5, 7 296.000				
B12,R, 3, 4 10449.000				126.50 (12.02)
B11,R, 2, 5 7487.000				
B09,R, 2, 5 10848.129				
B09,R, 3, 5 2864.869				
B07,R, 5, 7 13873.000				
B05,R, 7, 9 15384.996				
B03,R, 7, 9 27027.996				
B01,R, 7, 9 2897.000				
E12,R, 1, 3 9588.188	176.86 (18.45)		176.86* (18.45)	
E12,R, 1, 4 9004.457		166.17 (18.45)	166.17* (18.45)	
E12,R, 2, 4		12.86	12.86*	

782.271		(18.45)		(18.45)
E11,R, 2, 4 14015.000		258.58 (18.45)		258.58* (18.45)
E09,R, 2, 4 18345.018		338.47 (18.45)		338.47* (18.45)
E09,R, 3, 5 287.987			5.30 (18.45)	
E07,R, 3, 5 2248.996			41.48 (18.45)	
E07,R, 4, 5 15383.441				284.01 (18.45)
E05,R, 5, 7 11088.000				
E03,R, 7, 9 12080.996				
E01,R, 7, 9 17978.992				
F12,R, 1, 3 20057.996	304.48* (15.18)			
F11,R, 1, 3 25410.992	385.74* (15.18)			
F09,R, 1, 3 33428.000	507.45* (15.18)			
F07,R, 2, 4 21708.996		328.64* (15.18)		
F05,R, 4, 5 9480.000		143.60 (15.18)		143.60* (15.18)
F03,R, 5, 6 19821.996				302.42 15.18)
F01,R, 7, 9 17707.992				
G13,R, 1, 3 10588.000	160.68* (15.18)			
G11,R, 2, 4 3484.403		52.59* (15.18)		
G11,R, 3, 5 4763.994	132.03 (15.18)		132.03* (15.18)	
G09,R, 3, 5 22984.996	348.81 (15.18)		348.81* (15.18)	
G07,R, 3, 5	303.18		303.18*	

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18970.852	(15.18)		(15.18)							
G05,R, 4, 6		295.54		295.54+						
19468.992		(15.18)		(15.18)						
G03,R, 5, 8				1111.27						
73205.938				(15.18)						
G01,R, 7, 9										
4010.000										
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	97851.63	87490.75	17378.53	118870.38	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1725.71	1556.56	338.65	1823.29	0.0	0.0	0.0	0.0	0.0	0.0
HARVEST CUTS										
ACRES	89482.94	25173.40	97851.63	87490.75	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1358.35	382.13	1725.71	1556.56	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CUTS										
ACRES	187134.56	112664.13	115028.13	206481.13	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	3084.06	1938.69	2062.36	3379.85	0.0	0.0	0.0	0.0	0.0	0.0

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCPI TIMBER RAM ANALYSIS

OBJECTIVE TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21668.95 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,R, 2, 4	2216.00	116.85	52.64
A11,R, 2, 5	3023.00	148.34	49.07
A09,R, 3, 5	8423.00	361.13	42.87
A07,R, 5, 7	5086.70	229.62	45.32
A07,R, 5, 8	27785.31	1292.85	46.53
A05,R, 8, 8	11501.01	488.45	42.47
A05,R, 6, 9	10836.78	474.32	43.77
A05,R, 7, 8	7412.20	335.92	45.32
A03,R, 7, 9	14437.00	609.29	42.21
A01,R, 7, 9	5536.00	193.00	34.85
B13,R, 1, 3	9845.00	404.20	41.04
B11,R, 1, 3	11283.00	447.25	39.64
B09,R, 2, 4	8183.00	351.98	38.33
B07,R, 3, 5	4433.00	161.72	36.48
B05,R, 5, 7	2552.00	93.10	36.48
B03,R, 7, 9	2472.00	90.18	36.48
B01,R, 7, 9	171.00	5.24	30.62
C13,R, 1, 3	9067.00	262.87	28.97
C11,R, 1, 3	4382.00	121.58	27.74
C09,R, 1, 3	1785.00	47.36	26.53
C07,R, 2, 4	5044.00	130.08	25.79
C05,R, 3, 5	951.00	23.57	24.78
C03,R, 5, 7	296.00	7.33	24.78
D13,R, 2, 4	10449.00	332.70	31.84
D11,R, 2, 5	7487.00	222.51	29.72
D09,R, 2, 5	10848.13	285.28	26.30
D09,R, 3, 5	2854.67	78.34	27.44
D07,R, 5, 7	13873.00	380.67	27.44
D05,R, 7, 9	15389.00	422.27	27.44
D03,R, 7, 9	27026.00	633.27	23.43
D01,R, 7, 9	3897.00	68.78	17.65
E13,R, 1, 3	8588.17	429.27	44.78
E13,R, 1, 4	9006.48	405.80	45.39
E13,R, 2, 4	752.37	34.71	46.13
E11,R, 2, 4	14015.00	608.43	43.27
E09,R, 2, 4	18345.02	727.98	39.68
E09,R, 3, 5	297.88	12.07	40.48
E07,R, 3, 5	2248.56	84.14	37.42
E07,R, 4, 6	15393.44	610.50	39.66
E05,R, 5, 7	11095.00	415.17	37.42
E03,R, 7, 9	12051.00	450.95	37.42
E01,R, 7, 9	17578.98	552.51	31.43

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F13,R, 1, 3	20658.00	610.87	30.48	
F11,R, 1, 3	25410.99	819.98	32.15	
F09,R, 1, 3	32428.00	1066.05	31.88	
F07,R, 2, 4	21708.00	664.84	30.80	
F05,R, 4, 6	9480.00	291.37	30.60	
F03,R, 6, 8	19822.00	585.71	29.40	
F01,R, 7, 9	17707.99	485.73	27.43	
G13,R, 1, 3	10585.00	280.23	33.64	
G11,R, 2, 4	3464.40	79.65	22.99	
G11,R, 2, 5	8763.59	204.02	33.28	
G09,R, 2, 5	22965.00	501.10	21.82	
G07,R, 2, 5	18970.99	356.22	18.84	
G05,R, 4, 6	19468.99	377.31	19.38	
G03,R, 6, 8	73205.94	2152.26	29.40	
G01,R, 7, 9	4010.00	109.99	27.43	

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21668.98 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2284.67 M CUNITS/DECADE

AVERAGE OF POST-CONVERSION PERIODIC HARVESTS=, 2287.11 M CUNITS/DECADE

HARVEST REPORT

PERIOD	OVERSTORY REMOVAL CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	INTERMEDIATE CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	HARVEST CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	TOTAL CUTS ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0	0.0	0.0	144442.	2407.67	2407.67	0	0.0	0.0	144442.	2407.67	2407.67
2	0	0.0	0.0	184956.	2407.67	4815.34	0	0.0	0.0	184956.	2407.67	4815.34
3	0	0.0	0.0	10487.	163.56	4978.90	135435.	2244.11	2244.11	145922.	2407.67	7223.01
4	0	0.0	0.0	44322.	805.30	5784.19	94184.	1802.38	4046.49	138507.	2407.67	9830.68
5	0	0.0	0.0	60868.	1119.91	6704.10	90266.	1267.76	5334.25	150934.	2407.67	12038.34
6	0	0.0	0.0	115466.	1733.79	8437.88	44322.	873.88	6008.13	159788.	2407.67	14446.01
7	0	0.0	0.0	127692.	1809.85	10247.73	32863.	597.82	6605.95	160875.	2407.67	16853.68
8	0	0.0	0.0	0.	0.0	10247.73	132414.	2407.67	9013.62	132414.	2407.67	19261.35
9	0	0.0	0.0	0.	0.0	10247.73	138529.	2407.67	11421.29	138529.	2407.67	21669.02
10	0	0.0	0.0	89483.	1358.35	11605.08	0.	0.0	11421.29	89483.	1358.35	23027.37
11	0	0.0	0.0	71128.	1323.05	12929.12	0.	0.0	11421.29	71128.	1323.05	24350.41
12	0	0.0	0.0	110261.	1802.22	14831.34	89483.	1358.35	12779.64	199744.	3260.57	27610.98
13	0	0.0	0.0	56755.	901.39	15732.72	71128.	1323.05	14102.68	127880.	2224.43	29835.41
14	0	0.0	0.0	38583.	538.71	16271.43	110261.	1902.22	16004.89	148845.	2440.93	32276.34
15	0	0.0	0.0	112138.	1772.92	18044.35	56755.	901.39	16906.28	168892.	2674.30	34950.64
16	0	0.0	0.0	74877.	1230.89	19275.24	38583.	538.71	17444.99	111461.	1769.41	36720.04
17	0	0.0	0.0	70487.	1316.61	20591.84	112138.	1772.92	19217.91	182625.	3089.53	39809.58
18	0	0.0	0.0	48314.	856.69	21448.54	74877.	1230.89	20448.80	123191.	2187.58	41996.95
19	0	0.0	0.0	89483.	1358.35	22806.88	70487.	1316.61	21765.20	159970.	2674.96	44671.91
20	0	0.0	0.0	25173.	382.13	23188.81	48314.	856.69	22331.89	73487.	938.82	45210.72
21	0	0.0	0.0	97852.	1725.71	24914.52	89483.	1358.35	23880.24	187335.	3084.05	48294.78
22	0	0.0	0.0	87491.	1556.56	26171.08	25173.	382.13	24062.37	112884.	1938.69	50233.48
23	0	0.0	0.0	17377.	336.65	26507.73	97852.	1725.71	25788.08	115028.	2062.35	52295.84
24	0	0.0	0.0	118870.	1823.28	28331.01	87491.	1556.56	27344.64	206461.	3379.85	55675.69

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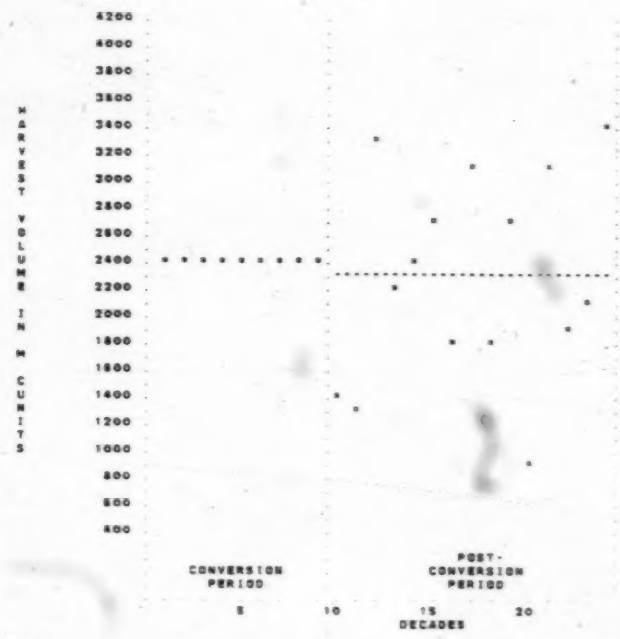
NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

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18. Appendix 6: Regeneration Control Printouts

1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN N37.7A, NEW YIELD TABLES,FIR REG WS
ALT. C. CUT, REGEN=7 YR LAG,4% CULL,NORMAL STOCKING, APRIL 18,1983.

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2000.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 9
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 18

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER AND UPPER BOUNDS

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.027
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAC*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE' IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED'

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	9	24		

NOTE' IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5. TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	2.216	1.00				
A11		11	L	3.023	1.00				
A09		9	L	6.423	1.00				
A07		7	L	32.852	1.00				
A05		5	L	29.750	1.00				
A03		3	L	14.437	1.00				
A01		1	L	5.538	1.00				
B13		13	L	9.649	1.00				
B11		11	L	11.283	1.00				
B09		9	L	9.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.582	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	5.087	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.785	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.951	1.00				
C03		3	L	0.296	1.00				
D13		13	L	10.449	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.673	1.00				
D05		5	L	15.388	1.00				
D03		3	L	27.028	1.00				
D01		1	L	3.897	1.00				
E13		13	L	19.348	1.00				
E11		11	L	14.015	1.00				
E09		9	L	16.843	1.00				
E07		7	L	17.842	1.00				
E05		5	L	11.088	1.00				
E03		3	L	12.051	1.00				
E01		1	L	17.979	1.00				
F13		13	L	20.088	1.00				
F11		11	L	25.411	1.00				
F09		9	L	33.429	1.00				
F07		7	L	21.709	1.00				
F05		5	L	8.480	1.00				
F03		3	L	19.822	1.00				
F01		1	L	17.708	1.00				
G13		13	L	10.585	1.00				
G11		11	L	12.226	1.00				
G09		9	L	22.965	1.00				
G07		7	L	15.971	1.00				
G05		5	L	15.469	1.00				
G03		3	L	73.208	1.00				
G01		1	L	4.010	1.00				

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 686.031 THOUSAND ACRES

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6. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT REG	CODES NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF SUSTAINED IMP YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	R		1	0	-1	1	1	4	3	6	3	5
A11	R		1	0	-1	1	1	6	3	6	3	5
A08	R		1	0	-1	1	1	8	3	10	3	5
A07	R		1	0	-1	1	1	10	3	12	3	5
A05	R		1	0	-1	1	3	12	5	14	3	5
A03	R		1	0	-1	1	5	14	7	16	3	5
A01	R		1	0	-1	1	7	16	9	18	3	5
B13	R		2	0	-1	1	1	4	3	6	3	5
B11	R		2	0	-1	1	1	6	3	6	3	5
B08	R		2	0	-1	1	1	8	3	10	3	5
B07	R		2	0	-1	1	1	10	3	12	3	5
B05	R		2	0	-1	1	3	12	5	14	3	5
B03	R		2	0	-1	1	5	14	7	16	3	5
B01	R		2	0	-1	1	7	16	9	18	3	5
C13	R		3	0	-1	1	1	4	3	6	3	5
C11	R		3	0	-1	1	1	6	3	6	3	5
C08	R		3	0	-1	1	1	8	3	10	3	5
C07	R		3	0	-1	1	1	10	3	12	3	5
C05	R		3	0	-1	1	3	12	5	14	3	5
C03	R		3	0	-1	1	5	14	7	16	3	5
D13	R		4	0	-1	1	1	4	3	6	3	5
D11	R		4	0	-1	1	1	6	3	6	3	5
D08	R		4	0	-1	1	1	8	3	10	3	5
D07	R		4	0	-1	1	1	10	3	12	3	5
D05	R		4	0	-1	1	3	12	5	14	3	5
D03	R		4	0	-1	1	5	14	7	16	3	5
D01	R		4	0	-1	1	7	16	9	18	3	5
E13	R		5	0	-1	1	1	4	3	6	3	5
E11	R		5	0	-1	1	1	6	3	6	3	5
E08	R		5	0	-1	1	1	8	3	10	3	5
E07	R		5	0	-1	1	1	10	3	12	3	5
E05	R		5	0	-1	1	3	12	5	14	3	5
E03	R		5	0	-1	1	5	14	7	16	3	5
E01	R		5	0	-1	1	7	16	9	18	3	5
F13	R		7	0	-1	1	1	4	3	6	3	5
F11	R		7	0	-1	1	1	6	3	6	3	5
F08	R		7	0	-1	1	1	8	3	10	3	5
F07	R		7	0	-1	1	1	10	3	12	3	5
F05	R		7	0	-1	1	3	12	5	14	3	5
F03	R		8	0	-1	1	5	14	7	16	3	5
F01	R		8	0	-1	1	7	16	9	18	3	5
G13	R		6	0	-1	1	1	4	3	6	3	5
G11	R		6	0	-1	1	1	6	3	6	3	5
G08	R		6	0	-1	1	1	8	3	10	3	5
G07	R		6	0	-1	1	1	10	3	12	3	5
G05	R		6	0	-1	1	3	12	5	14	3	5
G03	R		6	0	-1	1	5	14	7	16	3	5
G01	R		6	0	-1	1	7	16	9	18	3	5

7. VOLUME DATA

VOL CLASS 1 (PINE 8/4)
CLASS NUMBER 1

NORMAL ROTATION AGE . 16

IMPROVED ROTATION AGE . 0

MINIMUM CUT USED IN VOLUME REGULATION . 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	3.46	0.0	3.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	18.11	0.0	18.11	0.0	18.27	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	18.27	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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VDL CLASS 2 (WHITE SPRUCE 6/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.26	0.0	5.26	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	15.58	0.0
8	15.56	0.0	15.56	0.0	0.0	0.0
9	17.19	0.0	17.19	0.0	15.58	0.0
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VDL CLASS 3 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.26	0.0	7.26	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	15.58	0.0
8	12.51	0.0	12.51	0.0	0.0	0.0
9	12.85	0.0	12.85	0.0	15.58	0.0
10	13.28	0.0	13.28	0.0	0.0	0.0
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

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VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.35	0.0
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.88	0.0	12.88	0.0	12.35	0.0
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

VOL CLASS 5 (SW-PL 6/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	6.15	0.0	6.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	17.20	0.0
8	15.95	0.0	15.95	0.0	0.0	0.0
9	17.52	0.0	17.52	0.0	17.20	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

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VOL CLASS 6 (HS 6/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.99	0.0	8.99	0.0	0.0	0.0
7	8.21	0.0	8.21	0.0	15.86	0.0
8	9.08	0.0	9.08	0.0	0.0	0.0
9	9.75	0.0	9.75	0.0	15.86	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.78	0.0	10.78	0.0	0.0	0.0
12	11.18	0.0	11.18	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 7 (SH 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	0.0	0.0
7	13.30	0.0	13.30	0.0	15.86	0.0
8	14.89	0.0	14.89	0.0	0.0	0.0
9	15.80	0.0	15.80	0.0	15.86	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.86	0.0	15.86	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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VOL CLASS 6 (MW 6/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.84	0.0	7.84	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	0.0	0.0
7	12.82	0.0	12.82	0.0	15.88	0.0
8	13.88	0.0	13.88	0.0	0.0	0.0
9	14.81	0.0	14.81	0.0	15.68	0.0
10	15.82	0.0	15.82	0.0	0.0	0.0
11	16.06	0.0	16.06	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.98	0.0	16.98	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.25	0.0	17.25	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVL03

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N37.TA, NEW YIELD TABLES,FIR REG WS
ALT. C CUT, REGEN=7 YR LAG,4% CULL,NORMAL STOCKING, APRIL 18,1983.

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CASE OUTPUT=R

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	1	2	3	4	5	6	7	8	9	10
A13,R, 2, 4 2216.000		55.91 (25.23)		80.74* (27.47)						
A11,R, 2, 4 3023.000		68.58 (22.72)		76.27* (25.23)						
A09,R, 2, 5 8423.000		126.85 (15.75)			194.28* (24.02)					
A07,R, 4, 5 3144.790				62.11 (19.75)		71.45* (22.72)				
A07,R, 5, 7 1283.383					27.34 (21.30)		30.83* (24.02)			
A07,R, 5, 8 27565.047					587.14 (21.30)			695.47* (25.23)		
A07,R, 5, 9 886.790					18.28 (21.30)				22.63* (25.35)	
A05,R, 6, 9 5564.047						109.89 (19.75)			133.65* (24.02)	
A05,R, 7, 9 24185.841							515.18 (21.30)		580.85* (24.02)	
A03,R, 7, 9 14437.000							280.30 (19.03)		307.51* (21.30)	
A01,R, 7, 9 5538.000							77.20 (13.94)		88.85* (16.03)	
B13,R, 1, 3 8448.998	200.43 (20.35)		203.76* (20.69)							192.94 (19.59)
B11,R, 1, 3 11282.998	217.85 (19.29)		229.61* (20.35)							221.03 (19.59)
B08,R, 2, 4		168.87		183.02*						

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	8182.998		(18.40)		(19.83)															
B07,R, 3, 5					78.20				85.51*											
	4432.998				(17.19)				(19.29)											
B05,R, 5, 7									43.87				45.23*							
	2852.000								(17.19)				(18.29)							
B03,R, 6, 8											38.61				45.48*					
	2472.000										(15.58)				(18.40)					
B01,R, 7, 9													2.39				2.94*			
	171.000												(13.43)				(17.19)			
C13,R, 1, 3		128.39			134.28*														177.62	
	9067.000	(14.16)			(14.81)														(19.59)	
C11,R, 1, 3		59.51			62.05*														65.84	
	4381.998	(13.58)			(14.16)														(15.03)	
C09,R, 1, 3		23.12			24.24*														34.97	
	1765.000	(12.85)			(13.58)														(19.59)	
C07,R, 2, 4			83.10			86.86*														
	5043.998		(12.61)			(13.28)														
C05,R, 3, 5					11.28				12.32*											
	851.000				(11.83)				(12.95)											
C03,R, 5, 7									3.50				3.63*							
	296.000								(11.83)				(12.95)							
B13,R, 2, 4			159.87			172.83*														
	10448.000		(15.30)			(16.54)														
B11,R, 2, 4			103.17			114.55*														
	7487.000		(13.78)			(15.30)														
B09,R, 3, 5			116.48						143.80*											
	9863.117		(11.81)						(14.58)											
B05,R, 3, 5					49.38				55.99*											
	3839.880				(12.86)				(14.58)											
B07,R, 5, 7									178.41				202.27*							
	13872.000								(12.86)				(14.58)							
B05,R, 7, 9													197.90				224.37*			
	15386.998												(12.86)				(14.58)			
B03,R, 7, 9													385.89				347.58*			
	27027.998												(10.57)				(12.86)			
B01,R, 7, 9													27.59				41.19*			
	3897.000												(7.08)				(10.57)			
E13,R, 1, 3		218.38			230.66*														171.67	
	9880.810	(21.68)			(23.10)														(17.20)	
E13,R, 1, 4		180.98					187.83*													

	8347.826	(21.68)				(23.71)														
E13,R, 2, 4			22.78			24.09*														
	1016.183		(22.42)			(23.71)														
E11,R, 2, 4			292.21			314.22*														
	14015.000		(20.85)			(22.42)														
E09,R, 2, 5			350.87						404.18*											
	18643.004		(18.81)						(21.68)											
E07,R, 3, 5					11.88				13.51*											
	676.853				(17.52)				(19.90)											
E07,R, 4, 6						319.08				353.69*										
	16863.348					(18.81)				(20.85)										
E05,R, 5, 7									194.38				220.78*							
	11095.000								(17.52)				(19.90)							
E03,R, 6, 8											182.87				215.68*					
	11485.004										(15.95)				(18.81)					
E03,R, 7, 9													10.27				11.66*			
	585.994												(17.52)				(19.90)			
E01,R, 7, 9													344.52				307.98*			
	17878.992												(13.91)				(17.52)			
F13,R, 1, 3		316.12			292.65*														314.11	
	20057.996	(15.66)			(14.60)														(15.66)	
F11,R, 1, 3		413.84			403.02*														297.84	
	25410.992	(16.28)			(15.86)														(15.66)	
F09,R, 1, 3		521.48			544.56*														523.50	
	33429.000	(15.60)			(16.29)														(15.66)	
F07,R, 2, 4			315.91			349.73*														
	21706.996		(14.69)			(16.11)														
F05,R, 4, 6						136.87				152.40*										
	9480.000					(14.69)				(16.11)										
F03,R, 6, 8										276.52				309.19*						
	19821.998									(13.94)				(15.62)						
F01,R, 7, 9													223.47				262.28*			
	17707.992												(12.62)				(14.81)			
C13,R, 1, 3		121.84			128.29*														186.78	
	10585.000	(11.52)			(12.12)														(17.66)	
C11,R, 2, 4			138.48			144.88*														
	12227.998		(11.18)			(11.83)														
C09,R, 2, 5			236.84						264.58*											
	22964.998		(10.30)						(11.82)											
C07,R, 2, 6			181.34						214.89*											

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19970.992		(9.08)			(10.76)					
G06,R, 4, 5 19468.992				176.78 (9.08)		200.53* (10.30)				
G03,R, 6, 8 73205.938						1016.10 (13.88)		1136.16* (15.52)		
G01,R, 7, 9 4010.000							50.61 (12.62)		59.39* (14.81)	
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	144177.75	184235.00	9902.52	49037.13	57523.22	112628.94	130528.69	0.0	0.0	135829.81
M CUNITS	2401.95	2401.95	148.72	896.94	1052.92	1623.89	1895.01	0.0	0.0	2285.38
HARVEST CUTS										
ACRES	0.0	0.0	135829.81	84718.00	87767.56	49037.13	29099.38	134629.94	136951.50	0.0
M CUNITS	0.0	0.0	2253.23	1705.02	1349.03	778.07	506.95	2401.95	2401.95	0.0
TOTAL CUTS										
ACRES	144177.75	184235.00	145732.31	143755.13	145290.75	161666.06	159628.06	134629.94	136951.50	135829.81
M CUNITS	2401.95	2401.95	2401.95	2401.95	2401.95	2401.95	2401.95	2401.95	2401.95	2285.38

* = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME ACRES CUT	11	12	13	14	15	16	17	18	19	20
						TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)				
A13,R, 2, 4 2216.000		42.70 (19.27)		42.70* (19.27)						
A11,R, 2, 4 3023.000		58.25 (19.27)		58.25* (19.27)						
A09,R, 2, 5 6423.000			123.77 (19.27)		123.77* (19.27)					
A07,R, 4, 6 3144.790				60.60 (19.27)		60.60* (19.27)				
A07,R, 5, 7 1283.383					24.73 (19.27)		24.73* (19.27)			
A07,R, 5, 8 27565.047						531.18 (19.27)		531.18* (19.27)		
A07,R, 5, 9 866.790							16.55 (19.27)		16.55* (19.27)	
A05,R, 6, 9 5564.047							107.22 (19.27)		107.22* (19.27)	
A05,R, 7, 9 24165.941							466.06 (19.27)		466.06* (19.27)	
A03,R, 7, 9 14437.000							278.20 (19.27)		278.20* (19.27)	
A01,R, 7, 9 5538.000							106.72 (19.27)		106.72* (19.27)	
B13,R, 1, 3 9848.996		192.94* (19.59)							192.94 (19.59)	
B11,R, 1, 3 11282.996		221.03* (19.59)							221.03 (19.59)	
B09,R, 2, 4	179.89		179.89*							179.89

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9182.996	(19.59)		(19.59)												(19.59)	
B07,R, 2, 5		86.84		86.84*												
4432.996		(19.59)		(19.59)												
B05,R, 5, 7				49.99		49.99*										
2552.000				(19.59)		(19.59)										
B03,R, 6, 8					48.43		48.43*									
2472.000					(19.59)		(19.59)									
B01,R, 7, 8						3.35		3.35*								
171.000						(19.59)		(19.59)								
C13,R, 1, 3		177.82*										177.82				
9087.000		(19.59)										(19.59)				
C11,R, 1, 3		85.84*										85.84				
4381.996		(19.59)										(19.59)				
C08,R, 1, 3		34.97*										34.97				
1785.000		(19.59)										(19.59)				
C07,R, 2, 4	98.61		98.61*												98.61	
5043.996	(19.59)		(19.59)												(19.59)	
C05,R, 3, 5		18.63		18.63*												
951.000		(19.59)		(19.59)												
C03,R, 5, 7				5.80		5.80*										
296.000				(19.59)		(19.59)										
D13,R, 2, 4			129.05		129.05*											
10449.000			(12.35)		(12.35)											
D11,R, 2, 4			92.46		92.46*											
7487.000			(12.35)		(12.35)											
D09,R, 2, 5				121.81		121.81*										
9863.117				(12.35)		(12.35)										
D08,R, 3, 5				47.42		47.42*										
3839.880				(12.35)		(12.35)										
D07,R, 5, 7						171.33		171.33*								
13873.000						(12.35)		(12.35)								
D05,R, 7, 8								190.05		190.05*						
15386.996								(12.35)		(12.35)						
D03,R, 7, 8								333.80		333.80*						
27027.996								(12.35)		(12.35)						
D01,R, 7, 8								48.13		48.13*						
3897.000								(12.35)		(12.35)						
E13,R, 1, 3		171.87*										171.87				
9980.810		(17.20)										(17.20)				
E13,R, 1, 4	143.58		143.58*												143.58	

8347.996	(17.20)		(17.20)												(17.20)	
E13,R, 2, 4	17.48		17.48*												17.48	
1016.168	(17.20)		(17.20)												(17.20)	
E11,R, 2, 4	241.08		241.08*												241.08	
14015.000	(17.20)		(17.20)												(17.20)	
E09,R, 2, 5		320.68		320.68*												
18643.004		(17.20)		(17.20)												
E07,R, 3, 5		11.67		11.67*												
678.683		(17.20)		(17.20)												
E07,R, 4, 6			291.77		291.77*											
16963.348			(17.20)		(17.20)											
E05,R, 5, 7				190.83		190.83*										
11095.000				(17.20)		(17.20)										
E03,R, 6, 8					197.20		197.20*									
11465.004					(17.20)		(17.20)									
E03,R, 7, 8						10.08		10.08*								
585.994						(17.20)		(17.20)								
E01,R, 7, 8						302.36		302.36*								
17578.992						(17.20)		(17.20)								
F13,R, 1, 3		314.11*										314.11				
20057.996		(15.66)										(15.66)				
F11,R, 1, 3		397.94*										397.94				
25410.992		(15.66)										(15.66)				
F09,R, 1, 3		523.50*										523.50				
33429.000		(15.66)										(15.66)				
F07,R, 2, 4	339.96		339.96*												339.96	
21708.996	(15.66)		(15.66)												(15.66)	
F05,R, 4, 6			148.14		148.14*											
9460.000			(15.66)		(15.66)											
F03,R, 6, 8				311.98		311.98*										
19921.996				(15.66)		(15.66)										
F01,R, 7, 8					277.31		277.31*									
17707.992					(15.66)		(15.66)									
G13,R, 1, 3		185.78*										185.78				
10585.000		(15.66)										(15.66)				
G11,R, 2, 4	191.49		191.49*												191.49	
12227.996	(15.66)		(15.66)												(15.66)	
G09,R, 2, 5		359.63		359.63*												
22964.996		(15.66)		(15.66)												
G07,R, 2, 5		312.75		312.75*												

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18870.892		(15.88)		(15.88)						
C05,R, 4, 6			304.88		304.88*					
19468.892			(15.88)		(15.88)					
C03,R, 6, 8					1146.41		1146.41*			
73206.938					(15.88)		(15.88)			
C01,R, 7, 8						62.80		62.80*		
4010.000						(15.88)		(15.88)		
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	71543.06	72880.63	70251.31	30790.79	108348.31	81492.00	50583.78	46313.88	135829.81	71543.06
M CUNITS	1212.28	1211.14	1080.08	476.48	1728.74	1358.40	874.75	871.88	2285.38	1212.28
HARVEST CUTS										
ACRES	0.0	135829.81	71543.06	72880.63	70251.31	30790.79	108348.31	81492.00	50583.78	46313.88
M CUNITS	0.0	2285.38	1212.28	1211.14	1080.08	476.48	1728.74	1358.40	874.75	871.88
TOTAL CUTS										
ACRES	71543.06	208710.44	141794.38	103671.38	178599.63	112282.79	158932.08	127805.84	186413.58	117857.00
M CUNITS	1212.28	3496.52	2302.36	1687.60	2810.82	1834.88	2703.48	1930.38	3280.13	1764.28

+ = OVERSTORY REMOVAL CUT, * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	21	22	23	24	25	26	27	28	29	30
A13,R, 2, 4		42.70		42.70*						
2216.000		(19.27)		(19.27)						
A11,R, 2, 4		58.25		58.25*						
3023.000		(19.27)		(19.27)						
A09,R, 2, 5			123.77							
8423.000			(19.27)							
A07,R, 4, 6				60.60						
3144.780				(19.27)						
A07,R, 5, 7										
1263.383										
A07,R, 5, 8										
27565.047										
A07,R, 5, 9										
858.780										
A05,R, 6, 9										
5564.047										
A05,R, 7, 9										
24185.841										
A03,R, 7, 9										
14437.000										
A01,R, 7, 9										
5538.000										
B13,R, 1, 3	182.94*									
9848.888	(18.59)									
B11,R, 1, 3	221.03*									
11262.996	(19.59)									
B09,R, 2, 4		178.89*								

9182.998		(19.59)		
B07,R, 3, 5	86.84		86.84*	
4432.996	(19.59)		(19.59)	
B05,R, 5, 7			49.99	
2552.000			(19.59)	
B03,R, 6, 8				48.43
2472.000				(19.59)
B01,R, 7, 9				
171.000				
C13,R, 1, 3	177.62*			
9067.000	(19.59)			
C11,R, 1, 3	85.84*			
4381.996	(19.59)			
C09,R, 1, 3	34.97*			
1785.000	(19.59)			
C07,R, 2, 4		98.81*		
5043.996		(19.59)		
C05,R, 3, 5	18.63		18.63*	
951.000	(19.59)		(19.59)	
C03,R, 5, 7			5.80	
256.000			(19.59)	
D13,R, 2, 4				129.05
10449.000				(12.35)
D11,R, 2, 4				92.46
7487.000				(12.35)
D09,R, 2, 5				
9863.117				
D08,R, 3, 5				
3839.880				
D07,R, 5, 7				
13873.000				
D05,R, 7, 9				
15388.996				
D03,R, 7, 9				
27027.996				
D01,R, 7, 9				
3897.000				
E13,R, 1, 3	171.67*			
9980.910	(17.20)			
E13,R, 1, 4		143.58*		

8347.926		(17.20)		
E13,R, 2, 4		17.48*		
1016.158		(17.20)		
E11,R, 2, 4		241.06*		
14015.000		(17.20)		
E09,R, 2, 5	320.66		320.66*	
18643.004	(17.20)		(17.20)	
E07,R, 3, 5	11.67		11.67*	
678.653	(17.20)		(17.20)	
E07,R, 4, 6		291.77		291.77*
16963.346		(17.20)		(17.20)
E05,R, 5, 7			190.83	
11095.000			(17.20)	
E03,R, 6, 8				197.20
11465.004				(17.20)
E03,R, 7, 9				
585.994				
E01,R, 7, 9				
17578.992				
F13,R, 1, 3	314.11*			
20057.996	(15.66)			
F11,R, 1, 3	397.94*			
25410.992	(15.66)			
F09,R, 1, 3	523.50*			
33429.000	(15.66)			
F07,R, 2, 4		339.96*		
21708.996		(15.66)		
F05,R, 4, 6		148.14		148.14*
9460.000		(15.66)		(15.66)
F03,R, 6, 8				311.98
19921.996				(15.66)
F01,R, 7, 9				
17707.992				
G13,R, 1, 3	185.76*			
10585.000	(15.66)			
G11,R, 2, 4		191.49*		
12227.996		(15.66)		
G09,R, 2, 5	359.63		359.63*	
22984.996	(15.66)		(15.66)	
G07,R, 2, 5	312.75		312.75*	

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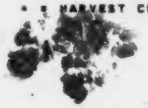
```
   19970.992    (  15.66)              (  15.66)

 G05,R, 4, 5                 304.88                 304.88*
   19468.992                (  15.66)              (  15.66)

 G03,R, 5, 6                                       1146.41
   73205.938                                      (  15.66)

 G01,R, 7, 9
    4010.000

OVERSTORY REMOVAL CUTS
  ACRES              0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0
  M CUNITS           0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0

INTERMEDIATE CUTS
  ACRES          67641.63   51131.34   20366.00  128145.69        0.0        0.0        0.0        0.0        0.0        0.0
  M CUNITS        1110.18     845.75     370.40    1986.12        0.0        0.0        0.0        0.0        0.0        0.0

HARVEST CUTS
  ACRES         135829.81   71543.06   67641.63   51131.34        0.0        0.0        0.0        0.0        0.0        0.0
  M CUNITS        2285.38    1212.28    1110.18     845.75        0.0        0.0        0.0        0.0        0.0        0.0

TOTAL CUTS
  ACRES         203471.44  122674.38   88007.63  179277.00        0.0        0.0        0.0        0.0        0.0        0.0
  M CUNITS        3395.57    2058.03    1480.58    2831.87        0.0        0.0        0.0        0.0        0.0        0.0

+ = OVERSTORY REMOVAL CUT;    * = HARVEST CUT
```



NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21617.48 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,R, 2, 4	2216.00	116.65	52.64
A11,R, 2, 4	3023.00	144.95	47.95
A09,R, 2, 5	6423.00	281.13	43.77
A07,R, 4, 6	3144.79	133.56	42.47
A07,R, 5, 7	1283.38	58.16	45.32
A07,R, 5, 8	27565.05	1282.60	46.53
A07,R, 5, 9	854.79	40.92	47.65
A05,R, 6, 9	5564.05	243.54	43.77
A05,R, 7, 9	24185.94	1096.11	45.32
A03,R, 7, 9	14437.00	567.81	39.33
A01,R, 7, 9	5538.00	177.05	31.97
B13,R, 1, 3	9849.00	404.20	41.04
B11,R, 1, 3	11283.00	447.26	39.64
B09,R, 2, 4	9183.00	351.98	38.33
B07,R, 3, 5	4433.00	161.72	36.48
B05,R, 5, 7	2552.00	93.10	36.48
B03,R, 6, 8	2472.00	84.00	33.98
B01,R, 7, 9	171.00	5.24	30.62
C13,R, 1, 3	9067.00	262.67	28.97
C11,R, 1, 3	4382.00	121.56	27.74
C09,R, 1, 3	1785.00	47.36	26.53
C07,R, 2, 4	5044.00	130.08	25.79
C05,R, 3, 5	951.00	23.67	24.78
C03,R, 5, 7	296.00	7.33	24.78
D13,R, 2, 4	10449.00	332.70	31.84
D11,R, 2, 4	7487.00	217.72	29.08
D09,R, 2, 5	9863.12	260.29	26.39
D09,R, 3, 5	3839.88	105.37	27.44
D07,R, 5, 7	13873.00	380.67	27.44
D05,R, 7, 9	15389.00	422.27	27.44
D03,R, 7, 9	27028.00	633.27	23.43
D01,R, 7, 9	3897.00	68.78	17.65
E13,R, 1, 3	9980.91	446.95	44.78
E13,R, 1, 4	8347.93	378.91	45.39
E13,R, 2, 4	1016.16	46.88	46.13
E11,R, 2, 4	14015.00	606.43	43.27
E09,R, 2, 5	18643.00	754.85	40.49
E07,R, 3, 5	678.65	25.40	37.42
E07,R, 4, 6	16963.35	672.77	39.66
E05,R, 5, 7	11095.00	415.17	37.42
E03,R, 6, 8	11465.00	398.52	34.76
E03,R, 7, 9	585.99	21.93	37.42

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E01,R, 7, 8	17674.88	562.51	31.43	
F13,R, 1, 3	20058.00	610.97	30.46	
F11,R, 1, 3	25410.88	816.88	32.15	
F08,R, 1, 3	33429.00	1048.05	31.89	
F07,R, 2, 4	21709.00	686.64	30.80	
F05,R, 4, 6	9480.00	291.37	30.80	
F03,R, 5, 8	18822.00	585.71	28.40	
F01,R, 7, 9	17707.89	485.73	27.43	
G13,R, 1, 3	10585.00	250.23	23.64	
G11,R, 2, 4	12228.00	281.12	22.99	
G09,R, 2, 5	22985.00	501.10	21.82	
G07,R, 2, 5	19870.89	396.22	19.84	
G05,R, 4, 6	19488.89	377.31	19.38	
G03,R, 6, 8	73205.84	2152.26	29.40	
G01,R, 7, 9	4010.00	109.89	27.43	

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 21617.46 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2336.09 M CUNITS/DECADE

AVERAGE OF POST-CONVERSION PERIODIC HARVESTS=, 2336.81 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	144178.	2401.95	2401.95	0.	0.0	0.0	144178.	2401.95	2401.95
2	0.	0.0	0.0	184235.	2401.95	4803.90	0.	0.0	0.0	184235.	2401.95	4803.90
3	0.	0.0	0.0	9803.	148.72	4952.63	135830.	2253.23	2253.23	145732.	2401.95	7205.85
4	0.	0.0	0.0	49037.	696.84	5649.58	94718.	1705.02	3958.25	143755.	2401.95	9607.80
5	0.	0.0	0.0	57523.	1052.92	6702.48	87788.	1349.03	5307.27	145291.	2401.95	12009.75
6	0.	0.0	0.0	112628.	1623.69	8326.37	49037.	778.07	6085.33	161868.	2401.95	14411.70
7	0.	0.0	0.0	130529.	1885.01	10221.37	29098.	506.95	6592.28	159628.	2401.95	16813.65
8	0.	0.0	0.0	0.	0.0	10221.37	134830.	2401.95	8994.23	134830.	2401.95	19215.60
9	0.	0.0	0.0	0.	0.0	10221.37	138952.	2401.95	11396.18	138952.	2401.95	21817.55
10	0.	0.0	0.0	135830.	2285.38	12506.75	0	0.0	11396.18	135830.	2285.38	23902.93
11	0.	0.0	0.0	71543.	1212.28	13719.02	0.	0.0	11396.18	71543.	1212.28	25115.21
12	0.	0.0	0.0	72881.	1211.14	14930.17	135830.	2285.38	13681.56	208710.	3496.52	28611.73
13	0.	0.0	0.0	70251.	1090.08	16020.25	71543.	1212.28	14893.84	141794.	2302.36	30914.09
14	0.	0.0	0.0	30791.	478.46	16498.70	72881.	1211.14	16104.98	103671.	1887.60	32801.68
15	0.	0.0	0.0	108348.	1728.74	18228.44	70251.	1090.08	17195.05	178600.	2818.82	35620.50
16	0.	0.0	0.0	81492.	1358.40	19583.84	30791.	476.46	17671.51	112283.	1834.86	37285.35
17	0.	0.0	0.0	50584.	874.75	20458.59	108348.	1728.74	19400.25	158932.	2703.49	39958.84
18	0.	0.0	0.0	46314.	671.96	21130.56	81492.	1358.40	20758.65	127806.	1930.36	41888.21
19	0.	0.0	0.0	135830.	2285.38	23415.95	50584.	874.75	21733.39	186414.	3260.13	45148.35
20	0.	0.0	0.0	71543.	1212.28	24628.22	46314.	671.96	22305.37	117857.	1784.26	46933.60
21	0.	0.0	0.0	67642.	1110.18	25738.40	135830.	2285.38	24590.75	203471.	3395.57	50329.18
22	0.	0.0	0.0	51131.	845.75	26584.15	71543.	1212.28	25803.03	122674.	2058.03	52387.20
23	0.	0.0	0.0	20366.	370.40	26954.55	67642.	1110.18	26913.21	88008.	1480.58	53867.77
24	0.	0.0	0.0	128145.	1986.12	28940.68	51131.	845.75	27758.96	179277.	2831.87	56699.64

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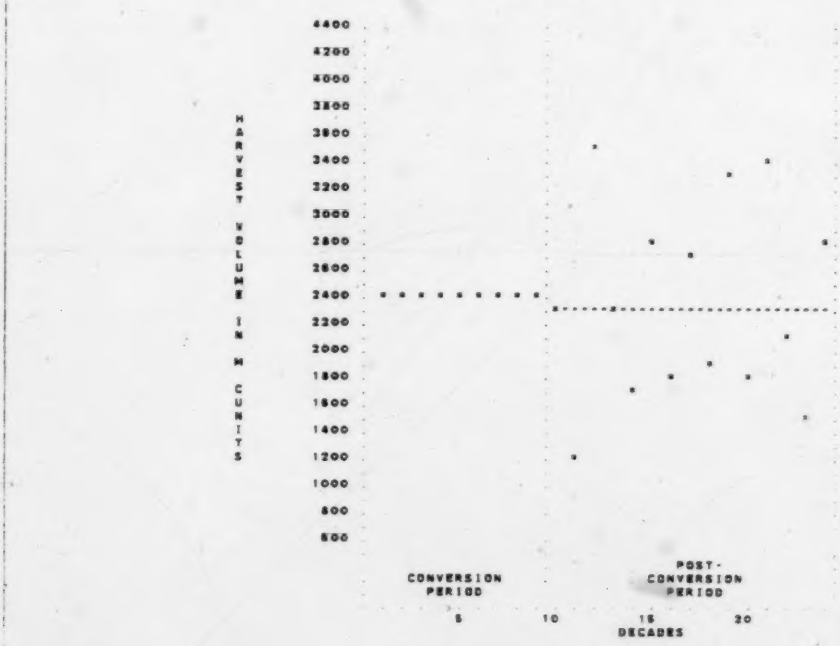
NCFI TIMBER RAN ANALYSIS

OBJECTIVE TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

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1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN #37.SA, NEW YIELD TABLES,FIR REG WS
ALT C. CUT, REGEN=5 YR LAG,4% CULL,NORMAL STOCKING, MAY 25,1982.

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2000.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 9
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 16

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL* LOWER AND UPPER BOUNDS

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.047
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

	MAX ACRES GEN IMP STOCK	HARVEST VOLUME
LP ROW NAME	PAC*	PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE' IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED'

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	3	24		

NOTE' IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5. TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	2.218	1.00				
A11		11	L	3.023	1.00				
A09		9	L	6.433	1.00				
A07		7	L	32.882	1.00				
A05		5	L	28.750	1.00				
A03		3	L	14.437	1.00				
A01		1	L	5.538	1.00				
B13		13	L	9.849	1.00				
B11		11	L	11.283	1.00				
B09		9	L	8.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.582	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	9.087	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.785	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.851	1.00				
C03		3	L	0.296	1.00				
D13		13	L	10.449	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.873	1.00				
D05		5	L	15.389	1.00				
D03		3	L	27.028	1.00				
D01		1	L	3.697	1.00				
E13		13	L	19.348	1.00				
E11		11	L	14.015	1.00				
E09		9	L	16.643	1.00				
E07		7	L	17.642	1.00				
E05		5	L	11.095	1.00				
E03		3	L	12.051	1.00				
E01		1	L	17.579	1.00				
F13		13	L	20.068	1.00				
F11		11	L	25.411	1.00				
F09		9	L	33.428	1.00				
F07		7	L	21.709	1.00				
F05		5	L	9.460	1.00				
F03		3	L	19.922	1.00				
F01		1	L	17.708	1.00				
G13		13	L	10.585	1.00				
G11		11	L	12.228	1.00				
G09		9	L	22.865	1.00				
G07		7	L	19.971	1.00				
G05		5	L	19.488	1.00				
G03		3	L	73.208	1.00				
G01		1	L	4.010	1.00				

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 668.031 THOUSAND ACRES

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6. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT CODES REC	NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF IMP SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	R		1	0	-1	1	1	4	3	6	3	5
A11	R		1	0	-1	1	1	6	3	8	3	5
A09	R		1	0	-1	1	1	8	3	10	3	5
A07	R		1	0	-1	1	1	10	3	12	3	5
A05	R		1	0	-1	1	3	12	5	14	3	5
A03	R		1	0	-1	1	5	14	7	16	3	5
A01	R		1	0	-1	1	7	16	9	18	3	5
B13	R		2	0	-1	1	1	4	3	6	3	5
B11	R		2	0	-1	1	1	6	3	8	3	5
B09	R		2	0	-1	1	1	8	3	10	3	5
B07	R		2	0	-1	1	1	10	3	12	3	5
B05	R		2	0	-1	1	3	12	5	14	3	5
B03	R		2	0	-1	1	5	14	7	16	3	5
B01	R		2	0	-1	1	7	16	9	18	3	5
C13	R		3	0	-1	1	1	4	3	6	3	5
C11	R		3	0	-1	1	1	6	3	8	3	5
C09	R		3	0	-1	1	1	8	3	10	3	5
C07	R		3	0	-1	1	1	10	3	12	3	5
C05	R		3	0	-1	1	3	12	5	14	3	5
C03	R		3	0	-1	1	5	14	7	16	3	5
D13	R		4	0	-1	1	1	4	3	6	3	5
D11	R		4	0	-1	1	1	6	3	8	3	5
D09	R		4	0	-1	1	1	8	3	10	3	5
D07	R		4	0	-1	1	1	10	3	12	3	5
D05	R		4	0	-1	1	3	12	5	14	3	5
D03	R		4	0	-1	1	5	14	7	16	3	5
D01	R		4	0	-1	1	7	16	9	18	3	5
E13	R		5	0	-1	1	1	4	3	6	3	5
E11	R		5	0	-1	1	1	6	3	8	3	5
E09	R		5	0	-1	1	1	8	3	10	3	5
E07	R		5	0	-1	1	1	10	3	12	3	5
E05	R		5	0	-1	1	3	12	5	14	3	5
E03	R		5	0	-1	1	5	14	7	16	3	5
E01	R		5	0	-1	1	7	16	9	18	3	5
F13	R		7	0	-1	1	1	4	3	6	3	5
F11	R		7	0	-1	1	1	6	3	8	3	5
F09	R		7	0	-1	1	1	8	3	10	3	5
F07	R		7	0	-1	1	1	10	3	12	3	5
F05	R		7	0	-1	1	3	12	5	14	3	5
F03	R		8	0	-1	1	5	14	7	16	3	5
F01	R		8	0	-1	1	7	16	9	18	3	5
G13	R		6	0	-1	1	1	4	3	6	3	5
G11	R		6	0	-1	1	1	6	3	8	3	5
G09	R		6	0	-1	1	1	8	3	10	3	5
G07	R		6	0	-1	1	1	10	3	12	3	5
G05	R		6	0	-1	1	3	12	5	14	3	5
G03	R		8	0	-1	1	5	14	7	16	3	5
G01	R		8	0	-1	1	7	16	9	18	3	5

7. VOLUME DATA

VOL CLASS 1 (PINE 8/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 10

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	18.87	0.0
9	18.03	0.0	18.03	0.0	0.0	0.0
10	19.75	0.0	19.75	0.0	18.87	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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VOL CLASS 2 (WHITE SPRUCE 6/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.28	0.0	8.28	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	20.05	0.0
8	15.58	0.0	15.58	0.0	0.0	0.0
9	17.18	0.0	17.18	0.0	20.05	0.0
10	18.40	0.0	18.40	0.0	0.0	0.0
11	18.28	0.0	18.28	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.48	0.0	20.48	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VOL CLASS 3 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.26	0.0	7.26	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	20.05	0.0
8	12.51	0.0	12.51	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	20.05	0.0
10	13.26	0.0	13.26	0.0	0.0	0.0
11	13.56	0.0	13.56	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.16	0.0	14.16	0.0	0.0	0.0
14	14.46	0.0	14.46	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

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VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	8.04	0.0	8.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.87	0.0
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.68	0.0	12.68	0.0	12.87	0.0
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.84	0.0	15.84	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

VOL CLASS 5 (SW-PL 6/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.15	0.0	8.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.81	0.0	13.81	0.0	17.58	0.0
8	15.85	0.0	15.85	0.0	0.0	0.0
9	17.52	0.0	17.52	0.0	17.58	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.66	0.0	21.66	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

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VOL CLASS 6 (NS 6/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	5.99	0.0	5.99	0.0	14.30	0.0
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.08	0.0	9.08	0.0	14.30	0.0
9	9.75	0.0	9.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.78	0.0	10.78	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 7 (SH 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	14.30	0.0
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.89	0.0	14.89	0.0	14.30	0.0
9	15.60	0.0	15.60	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.86	0.0	15.86	0.0	0.0	0.0
14	15.33	0.0	15.33	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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VOL CLASS 8 (MW 8/8)
CLASS NUMBER 8

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.84	0.0	7.84	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	14.30	0.0
7	12.62	0.0	12.62	0.0	0.0	0.0
8	13.66	0.0	13.66	0.0	14.30	0.0
9	14.81	0.0	14.81	0.0	0.0	0.0
10	15.82	0.0	15.82	0.0	0.0	0.0
11	16.06	0.0	16.06	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.88	0.0	16.88	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.25	0.0	17.25	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N37.9A, NEW YIELD TABLES,FIR REG WS
ALT. C. CUT, REGEN=5 YR LAG,4% CULL,NORMAL STOCKING, MAY 25,1982.

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CRBE OUTPUT=N

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC) 1	2	3	4	5	6	7	8	9	10
A13,R, 2, 4 2216.000		55.91 (25.23)		60.74* (27.41)						
A11,R, 2, 4 3023.000		68.68 (22.72)		78.27* (25.23)						
A09,R, 2, 4 6423.000		126.85 (19.75)		145.83* (22.72)						
A07,R, 2, 4 32862.004		529.25 (16.11)		646.83* (19.75)						
A05,R, 4, 8 3993.988				84.34 (16.11)		78.88* (19.75)				
A05,R, 6, 8 25766.012						508.68 (19.75)		585.18* (22.72)		
A03,R, 6, 8 14437.000						232.58 (16.11)		285.13* (19.75)		
A01,R, 7, 8 5536.000							77.20 (13.94)		99.85* (18.03)	
B13,R, 1, 3 9848.998	200.43 (20.25)		203.78* (20.69)							197.47 (20.05)
B11,R, 1, 3 11282.996	217.85 (19.29)		229.61* (20.35)							226.22 (20.05)
B09,R, 2, 4 9182.996		168.97 (18.40)		183.02* (19.93)						
B07,R, 2, 5 1741.077		27.13 (15.58)			33.69* (19.35)					
B07,R, 3, 5 3681.922			48.27 (17.18)		51.83* (19.29)					
B05,R, 4, 8				39.76		45.98*				

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2552.000						(15.58)				(14.40)										
B03,R, 6, 8 2472.000										38.51 (15.58)				45.48* (18.40)						
B01,R, 7, 8 171.000													2.30 (13.43)				2.94* (17.19)			
C13,R, 1, 3 9087.000		126.39 (14.16)			134.28* (14.81)														181.79 (20.05)	
C11,R, 1, 3 4381.998		59.51 (13.58)			62.08* (14.16)														87.85 (20.05)	
C09,R, 1, 3 1785.000		23.12 (12.95)			24.24* (13.58)														35.79 (20.05)	
C07,R, 2, 4 5043.996			83.10 (12.51)			85.98* (13.28)														
C05,R, 3, 5 951.000					11.25 (11.83)			12.32* (12.95)												
C03,R, 5, 7 296.000								3.50 (11.83)				3.83* (12.95)								
D13,R, 2, 4 10449.000			159.87 (15.30)			172.63* (16.54)														
D11,R, 2, 4 7487.000			103.17 (13.78)			114.55* (15.30)														
D09,R, 2, 4 13703.000			161.83 (11.81)			188.83* (13.78)														
D07,R, 5, 7 13873.000								178.41 (12.85)				202.27* (14.56)								
D05,R, 6, 8 15388.998										181.74 (11.81)				212.08* (13.78)						
D03,R, 8, 8 13082.941										118.09 (9.04)				154.27* (11.81)						
D02,R, 7, 8 13865.059												147.61 (10.57)				179.59* (12.85)				
D01,R, 8,12 3887.000														35.23 (9.04)						
E13,R, 1, 3 7809.785		169.32 (21.68)			180.41* (23.10)														137.30 (17.58)	
E13,R, 1, 4 4888.238		105.88 (21.68)				115.90* (23.71)														
E13,R, 2, 4 2846.802			63.83 (22.42)			67.50* (23.71)														
E13,R, 2, 5			85.20					92.27*												

3800.175			(22.42)					(24.28)												
E11,R, 2, 5 14015.000			282.21 (20.85)					323.75* (23.10)												
E09,R, 3, 5 18643.004			350.67 (18.81)					404.18* (21.68)												
E07,R, 2, 5 15746.489			251.16 (15.95)					313.38* (19.90)												
E07,R, 4, 6 1895.528						35.65 (18.81)				38.52* (20.85)										
E05,R, 4, 6 11095.000						176.97 (15.95)				208.70* (18.81)										
E03,R, 6, 8 12050.998										192.21 (15.98)				226.68* (18.81)						
E01,R, 7, 8 17878.992												244.62 (13.91)				307.98* (17.52)				
F13,R, 1, 3 20057.998		316.12 (15.86)			292.85* (14.80)											286.83 (14.30)				
F11,R, 1, 3 25410.992		413.94 (16.29)			403.02* (15.86)											383.38 (14.30)				
F09,R, 1, 3 33428.000		521.49 (15.60)			544.55* (16.29)											478.03 (14.30)				
F07,R, 4, 7 21706.998						348.73 (16.11)						364.30* (15.86)								
F05,R, 5, 7 9480.000								147.58 (15.60)				154.10* (16.29)								
F03,R, 6, 8 19921.998										276.52 (13.88)				309.19* (15.52)						
F01,R, 7, 8 17707.992												223.47 (12.62)				282.26* (14.81)				
G13,R, 1, 3 10585.000		121.94 (11.52)			128.29* (12.12)											151.37 (14.30)				
G11,R, 1, 3 12227.998		131.57 (10.76)			140.67* (11.52)											174.85 (14.30)				
G09,R, 1, 3 9884.820		95.35 (9.75)			105.36* (10.76)											141.35 (14.30)				
G09,R, 5, 7 13080.188								150.88 (11.52)				158.53* (12.12)								
G07,R, 5, 7 18970.992								214.89 (10.76)				230.07* (11.52)								
G05,R, 5, 7								189.82				208.48*								

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19468.892				(9.76)		(10.78)				
C03,R, 5, 7				391.97		458.52*				
31027.859				(12.62)		(14.81)				
C03,R, 6, 8					585.43		854.80*			
42178.128					(13.88)		(15.52)			
C01,R, 7, 8						50.61		59.39*		
4010.000						(12.62)		(14.81)		
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	180859.69	147172.38	3642.82	41245.50	107178.94	145267.94	58971.04	3897.00	111595.69	44175.77
M CUNITS	2507.83	2507.83	57.82	686.48	1276.45	2133.77	745.71	35.23	1585.82	686.43
HARVEST CUTS										
ACRES	0.0	0.0	155771.50	98114.88	57586.84	18536.51	128885.88	145267.94	58971.04	0.0
M CUNITS	0.0	0.0	2450.30	1641.37	1231.38	374.06	1782.12	2472.80	912.01	0.0
TOTAL CUTS										
ACRES	180859.69	147172.38	159414.38	139360.38	164765.88	164804.44	187856.88	149164.94	170586.69	44175.77
M CUNITS	2507.83	2507.83	2507.83	2507.83	2507.83	2507.83	2507.83	2507.83	2507.83	686.43

→ * OVERSTORY REMOVAL CUT; * # HARVEST CUT

NCPI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	11	12	13	14	15	16	17	18	19	20
A13,R, 2, 4		43.58		43.58*						
2218.000		(19.67)		(19.67)						
A11,R, 2, 4		59.46		59.46*						
3023.000		(19.67)		(19.67)						
A08,R, 2, 4		126.34		126.34*						
6423.000		(19.67)		(19.67)						
A07,R, 2, 4		646.20		646.20*						
32852.004		(19.67)		(19.67)						
A05,R, 4, 8				78.58		78.58*				
3993.986				(19.67)		(19.67)				
A05,R, 6, 8						506.82		506.82*		
25756.012						(19.67)		(19.67)		
A03,R, 6, 8						283.98		283.98*		
14437.000						(19.67)		(19.67)		
A01,R, 7, 8							108.93		108.93*	
5538.000							(19.67)		(19.67)	
B13,R, 1, 3		197.47*							197.47	
9848.996		(20.05)							(20.05)	
B11,R, 1, 3		226.22*							226.22	
11282.888		(20.05)							(20.05)	
B08,R, 2, 4	184.12		184.12*							184.12
9182.986	(20.05)		(20.05)							(20.05)
B07,R, 2, 5		34.91		34.91*						
1741.077		(20.05)		(20.05)						
B07,R, 3, 5		53.97		53.97*						
2691.922		(20.05)		(20.05)						
B05,R, 4, 8			51.17		51.17*					

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2852.000			(20.05)		(20.05)							
B03,R, 6, 8 2472.000					49.58 (20.05)		49.58* (20.05)					
B01,R, 7, 8 171.000						2.43 (20.05)		2.43* (20.05)				
C12,R, 1, 3 9087.000		181.79* (20.05)							181.79 (20.05)			
C11,R, 1, 3 4381.996		87.85* (20.05)							87.85 (20.05)			
C09,R, 1, 3 1788.000		35.79* (20.05)							35.79 (20.05)			
C07,R, 2, 4 5043.996	101.13 (20.05)		101.13* (20.05)								101.13 (20.05)	
C05,R, 3, 5 951.000		19.07 (20.05)		19.07* (20.05)								
C03,R, 5, 7 298.000				5.93 (20.05)		5.93* (20.05)						
D13,R, 2, 4 10449.000			131.34 (12.57)		131.34* (12.57)							
D11,R, 2, 4 7487.000			94.11 (12.57)		94.11* (12.57)							
D09,R, 2, 4 13703.000			172.25 (12.57)		172.25* (12.57)							
D07,R, 5, 7 13873.000						174.38 (12.57)		174.38* (12.57)				
D05,R, 6, 8 15288.996							193.44 (12.57)		193.44* (12.57)			
D03,R, 6, 8 13082.941							164.20 (12.57)		164.20* (12.57)			
D03,R, 7, 8 13965.069								175.54 (12.57)			175.54* (12.57)	
D01,R, 8,12 3687.000		53.70* (13.78)										
E13,R, 1, 2 7809.785		137.30* (17.58)							137.30 (17.58)			
E13,R, 1, 4 4886.238	85.94 (17.58)		85.94* (17.58)								85.94 (17.58)	
E13,R, 2, 4 2846.802	50.05 (17.58)		50.05* (17.58)								50.05 (17.58)	
E13,R, 2, 5		66.81		66.81*								

3800.176		(17.58)		(17.58)								
E11,R, 2, 5 14015.000		246.38 (17.58)		246.38* (17.58)								
E09,R, 2, 5 18643.004		327.74 (17.58)		327.74* (17.58)								
E07,R, 2, 5 15746.449		276.82 (17.58)		276.82* (17.58)								
E07,R, 4, 6 1895.526			33.32 (17.58)		33.32* (17.58)							
E05,R, 4, 6 11095.000			195.05 (17.58)		195.05* (17.58)							
E03,R, 6, 8 12060.996					211.86 (17.58)		211.86* (17.58)					
E01,R, 7, 8 17574.992						309.04 (17.58)		309.04* (17.58)				
F13,R, 1, 3 20067.996	285.83* (14.30)						285.83 (14.30)		285.83* (14.30)			
F11,R, 1, 3 25410.992	383.38* (14.30)						383.38 (14.30)		383.38* (14.30)			
F09,R, 1, 3 33428.000	478.03* (14.30)						478.03 (14.30)		478.03* (14.30)			
F07,R, 4, 7 21708.996			310.44 (14.30)		310.44* (14.30)							
F05,R, 5, 7 9460.000			135.28 (14.30)		135.28* (14.30)							
F03,R, 6, 8 19921.996				284.88 (14.30)		284.88* (14.30)						
F01,R, 7, 8 17707.992					253.22 (14.30)		253.22* (14.30)					
G13,R, 1, 3 10585.000	151.37* (14.30)						151.37 (14.30)		151.37* (14.30)			
G11,R, 1, 3 12227.996	174.88* (14.30)						174.88 (14.30)		174.88* (14.30)			
G09,R, 1, 3 9884.820	141.38* (14.30)						141.38 (14.30)		141.38* (14.30)			
G09,R, 5, 7 13080.164			187.05 (14.30)		187.05* (14.30)							
G07,R, 5, 7 19970.992			285.58 (14.30)		285.58* (14.30)							
G05,R, 5, 7			278.41		278.41*							

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15488.552			(14.30)		(14.30)					
G03,R, 5, 7			443.70		443.70*					
31027.859			(14.30)		(14.30)					
G03,R, 6, 8				603.15		603.15*				
42178.129				(14.30)		(14.30)				
G01,R, 7, 9					57.34		57.34*			
4010.000					(14.30)		(14.30)			
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	21862.03	102102.56	161898.31	66380.06	36240.89	71816.00	145585.63	13965.06	44175.77	21862.03
M CUNITS	421.23	1901.30	2317.70	872.53	571.99	1277.46	2062.38	176.84	866.43	421.23
HARVEST CUTS										
ACRES	111585.69	48072.77	21862.03	102102.56	161898.31	66380.06	36240.89	71816.00	145585.63	13965.06
M CUNITS	1585.82	920.13	421.23	1901.30	2317.70	872.53	571.99	1277.46	2062.38	176.84
TOTAL CUTS										
ACRES	133567.69	150176.31	183860.31	168482.63	198139.25	138206.06	181826.56	85781.00	189761.38	35827.09
M CUNITS	2017.05	2821.43	2738.93	2873.82	2889.68	2149.97	2634.36	1452.98	2928.83	598.77

* = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME
ACRES CUT

TOTAL VOLUME CUT - M CUNITS
(VOLUME CUT / ACRE - CUNITS/AC)

	21	22	23	24	25	26	27	28	29	30
A13,R, 2, 4		43.59		43.59*						
2216.000		(19.67)		(19.67)						
A11,R, 2, 4		59.48		59.48*						
3023.000		(19.67)		(19.67)						
A09,R, 2, 4		126.34		126.34*						
6423.000		(19.67)		(19.67)						
A07,R, 2, 4		646.20		646.20*						
32852.004		(19.67)		(19.67)						
A05,R, 4, 6				76.56						
3893.856				(19.67)						
A05,R, 6, 6										
25786.012										
A03,R, 6, 6										
14437.000										
A01,R, 7, 8										
5838.000										
B13,R, 1, 3	187.47*									
9446.898	(20.05)									
B11,R, 1, 3	226.22*									
11282.898	(20.05)									
B09,R, 2, 4		184.12*								
9182.898		(20.05)								
B07,R, 2, 5	34.91		34.91*							
1741.077	(20.05)		(20.05)							
B07,R, 3, 5	53.87		53.87*							
2691.922	(20.05)		(20.05)							
B05,R, 4, 5		51.17		51.17*						

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2582.000		(20.05)		(20.05)
B03,R, 6, 8				49.56
2472.000				(20.05)
B01,R, 7, 9				
171.000				
C13,R, 1, 3	181.79*			
9067.000	(20.05)			
C11,R, 1, 3	87.86*			
4381.988	(20.05)			
C09,R, 1, 3	35.79*			
1785.000	(20.05)			
C07,R, 2, 4		101.13*		
5043.988		(20.05)		
C05,R, 3, 5	19.07		19.07*	
951.000	(20.05)		(20.05)	
C03,R, 5, 7			5.93	
296.000			(20.05)	
D13,R, 2, 4				131.34
10448.000				(12.57)
D11,R, 2, 4				84.11
7467.000				(12.57)
D09,R, 2, 4				172.25
13702.000				(12.57)
D07,R, 5, 7				
13873.000				
D05,R, 5, 8				
15388.988				
D03,R, 6, 8				
13062.841				
D03,R, 7, 9				
13985.059				
D01,R, 8,12	48.88		48.88*	
3887.000	(12.57)		(12.57)	
E13,R, 1, 3	137.30*			
7809.785	(17.58)			
E13,R, 1, 4		85.94*		
4888.238		(17.58)		
E13,R, 2, 4		50.05*		
2846.802		(17.58)		
E13,R, 2, 5	86.81		86.81*	

3800.175	(17.58)		(17.58)	
E11,R, 2, 5	248.38		248.38*	
14015.000	(17.58)		(17.58)	
E09,R, 2, 5	327.74		327.74*	
18543.004	(17.58)		(17.58)	
E07,R, 2, 5	278.82		278.82*	
15746.489	(17.58)		(17.58)	
E07,R, 4, 6		33.32		33.32*
1885.528		(17.58)		(17.58)
E05,R, 4, 6		185.05		185.05*
11095.000		(17.58)		(17.58)
E03,R, 6, 8				211.88
12050.898				(17.58)
E01,R, 7, 9				
17578.892				
F13,R, 1, 3				
20057.898				
F11,R, 1, 3				
29410.892				
F09,R, 1, 3				
33428.000				
F07,R, 4, 7	310.44		310.44*	
21708.898	(14.30)		(14.30)	
F05,R, 5, 7	135.28		135.28*	
9460.000	(14.30)		(14.30)	
F03,R, 6, 8		284.88		284.88*
19921.898		(14.30)		(14.30)
F01,R, 7, 9			283.22	
17707.892			(14.30)	
G13,R, 1, 3				
10688.000				
G11,R, 1, 3				
12227.896				
G09,R, 1, 3				
9884.820				
G09,R, 5, 7	187.05		187.05*	
13080.188	(14.30)		(14.30)	
G07,R, 5, 7	285.58		285.58*	
19970.892	(14.30)		(14.30)	
G05,R, 5, 7	278.41		278.41*	

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19488.892	(14.30)		(14.30)							
G03,R, 5, 7	443.70		443.70*							
31027.859	(14.30)		(14.30)							
G03,R, 6, 8		803.15		803.15*						
42178.129		(14.30)		(14.30)						
G01,R, 7, 9			57.34							
4010.000			(14.30)							
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	176302.44	122156.63	22913.88	50155.56	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	2715.14	2043.16	316.50	737.66	0.0	0.0	0.0	0.0	0.0	0.0
HARVEST CUTS										
ACRES	44175.77	21962.03	176302.44	122156.63	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	888.43	421.23	2715.14	2043.16	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CUTS										
ACRES	220378.19	144118.63	199216.38	172312.56	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	3581.58	2464.40	3031.65	2780.85	0.0	0.0	0.0	0.0	0.0	0.0

* = OVERSTORY REMOVAL CUT; + = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 5
TOTAL OBJECTIVE VALUE = 23570.34 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,R, 2, 4	2216.00	116.65	52.64
A11,R, 2, 4	3023.00	144.95	47.95
A09,R, 2, 4	6423.00	272.78	42.47
A07,R, 2, 4	32852.00	1178.07	35.86
A05,R, 4, 6	3993.88	143.22	35.86
A05,R, 5, 6	25756.01	1083.88	42.07
A03,R, 6, 8	14437.00	517.71	35.86
A01,R, 7, 9	5538.00	177.05	31.97
B13,R, 1, 3	9848.00	404.20	41.04
B11,R, 1, 3	11283.00	447.26	39.64
B09,R, 2, 4	9183.00	351.98	38.33
B07,R, 2, 5	1741.08	60.71	34.87
B07,R, 3, 5	2891.92	98.20	34.46
B05,R, 4, 6	2552.00	88.72	33.98
B03,R, 5, 6	2472.00	84.00	33.98
B01,R, 7, 9	171.00	5.24	30.82
C13,R, 1, 3	9087.00	262.87	28.87
C11,R, 1, 3	4382.00	121.86	27.74
C09,R, 1, 3	1745.00	47.36	26.53
C07,R, 2, 4	5044.00	130.08	25.79
C05,R, 3, 5	951.00	23.67	24.78
C03,R, 5, 7	296.00	7.33	24.78
D13,R, 2, 4	10449.00	332.70	31.84
D11,R, 2, 4	7487.00	217.72	29.08
D09,R, 2, 4	13703.00	350.88	25.60
D07,R, 5, 7	13873.00	380.67	27.44
D05,R, 6, 8	15389.00	393.80	25.58
D03,R, 6, 8	13062.94	272.36	20.85
D03,R, 7, 9	13985.05	327.20	23.43
D01,R, 8,12	3897.00	35.23	9.04
E13,R, 1, 3	7809.79	349.72	44.78
E13,R, 1, 4	4888.24	221.88	45.38
E13,R, 2, 4	2846.80	131.32	46.13
E13,R, 2, 5	3800.17	177.47	46.70
E11,R, 2, 5	14015.00	615.95	43.95
E09,R, 2, 5	18843.00	754.85	40.49
E07,R, 2, 5	15748.47	554.51	35.85
E07,R, 4, 6	1895.53	75.18	39.68
E05,R, 4, 6	11088.00	385.88	34.78
E03,R, 6, 8	12051.00	418.89	34.76
E01,R, 7, 9	17878.89	552.51	31.43
F13,R, 1, 3	20058.00	897.80	44.76

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F11,R, 1, 3	28410.55	1150.34	40.49	
F09,R, 1, 3	33429.00	1544.03	46.19	
F07,R, 4, 7	21708.00	694.04	31.97	
F05,R, 5, 7	9460.00	301.68	31.89	
F03,R, 6, 8	19922.00	585.71	29.40	
F01,R, 7, 8	17707.99	485.73	27.43	
G13,R, 1, 3	10585.00	401.58	37.94	
G11,R, 1, 3	12228.00	447.30	36.58	
G09,R, 1, 3	9884.82	344.09	34.81	
G08,R, 5, 7	13060.17	308.22	23.64	
G07,R, 5, 7	19870.99	444.98	22.28	
G05,R, 5, 7	19488.89	398.31	20.51	
G03,R, 5, 7	31027.86	851.08	27.43	
G03,R, 8, 8	42178.13	1240.04	29.40	
G01,R, 7, 8	4010.00	109.98	27.43	

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8
TOTAL OBJECTIVE VALUE = 22570.34 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2394.38 M CUNITS/DECADE

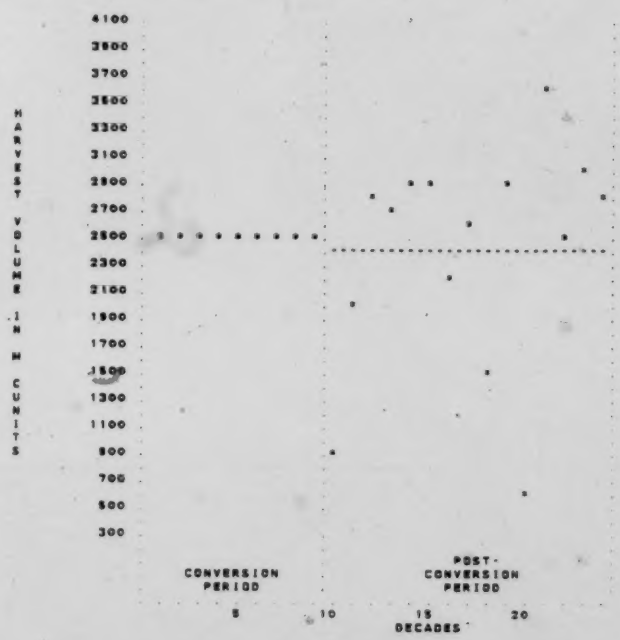
AVERAGE OF POST-CONVERSION PERIODIC HARVESTS= 2395.25 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	180880.	2807.83	2807.83	0.	0.0	0.0	180880.	2807.83	2807.83
2	0.	0.0	0.0	147172.	2807.83	5615.65	0.	0.0	0.0	147172.	2807.83	5615.65
3	0.	0.0	0.0	3843.	57.52	5673.18	155772.	2450.30	2450.30	159614.	2507.83	7823.48
4	0.	0.0	0.0	41248.	886.46	6738.63	98115.	1841.37	4291.67	139380.	2807.83	10031.30
5	0.	0.0	0.0	107177.	1278.45	7016.08	57589.	1231.38	5523.05	164766.	2807.83	12538.13
6	0.	0.0	0.0	145268.	2133.77	9149.85	18537.	274.08	5897.10	164804.	2807.83	15046.95
7	0.	0.0	0.0	58971.	746.71	9896.56	128686.	1762.12	7659.21	187657.	2807.83	17854.77
8	0.	0.0	0.0	3857.	35.22	9930.79	145268.	2472.80	10131.81	149185.	2807.83	20062.60
9	0.	0.0	0.0	111586.	1585.82	11626.80	58971.	813.01	11043.82	170657.	2807.83	22870.42
10	0.	0.0	0.0	44178.	666.43	12293.04	0.	0.0	11043.82	44178.	666.43	23436.86
11	0.	0.0	0.0	21982.	421.23	12814.27	111586.	1595.82	12639.63	133858.	2017.05	25453.91
12	0.	0.0	0.0	102102.	1901.30	14715.58	48073.	920.13	13559.77	150175.	2821.43	28275.34
13	0.	0.0	0.0	161886.	2317.70	17033.28	21982.	421.23	13981.00	183868.	2738.93	31014.26
14	0.	0.0	0.0	66390.	972.53	18005.78	102103.	1901.30	15882.28	168493.	2873.82	33888.08
15	0.	0.0	0.0	38241.	871.99	18877.77	161886.	2317.70	18198.98	198138.	3189.68	36777.77
16	0.	0.0	0.0	71816.	1277.45	19855.21	66390.	972.53	19172.51	138206.	2249.97	39027.74
17	0.	0.0	0.0	145586.	2062.39	21917.60	38241.	871.99	19744.50	161827.	2834.38	41862.12
18	0.	0.0	0.0	13985.	175.54	22093.14	71816.	1277.45	21021.94	85781.	1452.99	43115.10
19	0.	0.0	0.0	44178.	666.43	22859.57	145586.	2062.39	23084.33	189761.	2928.83	46043.93
20	0.	0.0	0.0	21982.	421.23	23280.80	13985.	175.54	23259.87	35927.	596.77	46840.70
21	0.	0.0	0.0	176202.	2715.14	26095.95	44178.	666.43	24126.30	220378.	3381.58	50222.28
22	0.	0.0	0.0	122157.	2043.18	28139.11	21982.	421.23	24547.54	144118.	2464.40	52686.67
23	0.	0.0	0.0	22014.	318.80	28457.91	176202.	2715.14	27262.68	198216.	3033.95	55719.62
24	0.	0.0	0.0	50158.	737.68	29193.28	122157.	2043.18	29305.84	172313.	2780.85	58499.18

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 = HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

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1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN N37.52A, NEW YIELD TABLES,FIR REG WS
ALT. C. CUT, REGEN=5,2 YR LAG,4% CULL,NORMAL STOCKING, MAY 25,1982.

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2000.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 9
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 18

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER AND UPPER BOUNDS

2 CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.047
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAG*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE' IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED'

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	9	24		

NOTE' IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5. TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	2.218	1.00				
A11		11	L	3.023	1.00				
A09		9	L	6.423	1.00				
A07		7	L	32.652	1.00				
A05		5	L	29.750	1.00				
A03		3	L	14.437	1.00				
A01		1	L	5.538	1.00				
B13		13	L	9.649	1.00				
B11		11	L	11.283	1.00				
B09		9	L	9.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.552	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	9.067	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.755	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.951	1.00				
C03		3	L	0.296	1.00				
D13		13	L	10.448	1.00				
D11		11	L	7.467	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.873	1.00				
D05		5	L	16.389	1.00				
D03		3	L	27.026	1.00				
D01		1	L	3.897	1.00				
E13		13	L	19.345	1.00				
E11		11	L	14.015	1.00				
E09		9	L	18.843	1.00				
E07		7	L	17.642	1.00				
E05		5	L	11.095	1.00				
E03		3	L	12.051	1.00				
E01		1	L	17.578	1.00				
F13		13	L	20.058	1.00				
F11		11	L	25.411	1.00				
F09		9	L	33.439	1.00				
F07		7	L	21.705	1.00				
F05		5	L	9.480	1.00				
F03		3	L	19.922	1.00				
F01		1	L	17.705	1.00				
G13		13	L	10.585	1.00				
G11		11	L	12.226	1.00				
G09		9	L	22.985	1.00				
G07		7	L	19.971	1.00				
G05		5	L	19.489	1.00				
G03		3	L	73.206	1.00				
G01		1	L	4.010	1.00				

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 668.031 THOUSAND ACRES

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6. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT REG	CODES NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF IMP SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	R		1	0	-1	1	1	4	3	6	3	6
A11	R		1	0	-1	1	1	6	3	8	3	6
A09	R		1	0	-1	1	1	8	3	10	3	6
A07	R		1	0	-1	1	1	10	3	12	3	6
A05	R		1	0	-1	1	3	12	5	14	3	6
A03	R		1	0	-1	1	5	14	7	16	3	6
A01	R		1	0	-1	1	7	16	9	18	3	6
B13	R		2	0	-1	1	1	4	3	6	3	6
B11	R		2	0	-1	1	1	6	3	8	3	6
B09	R		2	0	-1	1	1	8	3	10	3	6
B07	R		2	0	-1	1	1	10	3	12	3	6
B05	R		2	0	-1	1	3	12	5	14	3	6
B03	R		2	0	-1	1	5	14	7	16	3	6
B01	R		2	0	-1	1	7	16	9	18	3	6
C13	R		3	0	-1	1	1	4	3	6	3	6
C11	R		3	0	-1	1	1	6	3	8	3	6
C09	R		3	0	-1	1	1	8	3	10	3	6
C07	R		3	0	-1	1	1	10	3	12	3	6
C05	R		3	0	-1	1	3	12	5	14	3	6
C03	R		3	0	-1	1	5	14	7	16	3	6
D13	R		4	0	-1	1	1	4	3	6	3	6
D11	R		4	0	-1	1	1	6	3	8	3	6
D09	R		4	0	-1	1	1	8	3	10	3	6
D07	R		4	0	-1	1	1	10	3	12	3	6
D05	R		4	0	-1	1	3	12	5	14	3	6
D03	R		4	0	-1	1	5	14	7	16	3	6
D01	R		4	0	-1	1	7	16	9	18	3	6
E13	R		5	0	-1	1	1	4	3	6	3	6
E11	R		5	0	-1	1	1	6	3	8	3	6
E09	R		5	0	-1	1	1	8	3	10	3	6
E07	R		5	0	-1	1	1	10	3	12	3	6
E05	R		5	0	-1	1	3	12	5	14	3	6
E03	R		5	0	-1	1	5	14	7	16	3	6
E01	R		5	0	-1	1	7	16	9	18	3	6
F13	R		7	0	-1	1	1	4	3	6	3	6
F11	R		7	0	-1	1	1	6	3	8	3	6
F09	R		7	0	-1	1	1	8	3	10	3	6
F07	R		7	0	-1	1	1	10	3	12	3	6
F05	R		7	0	-1	1	3	12	5	14	3	6
F03	R		8	0	-1	1	5	14	7	16	3	6
F01	R		8	0	-1	1	7	16	9	18	3	6
G13	R		8	0	-1	1	1	4	3	6	3	6
G11	R		8	0	-1	1	1	6	3	8	3	6
G09	R		8	0	-1	1	1	8	3	10	3	6
G07	R		8	0	-1	1	1	10	3	12	3	6
G05	R		8	0	-1	1	3	12	5	14	3	6
G03	R		8	0	-1	1	5	14	7	16	3	6
G01	R		8	0	-1	1	7	16	9	18	3	6

7. VOLUME DATA

VOL CLASS 1 (PINE 6/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.46	0.0	5.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	16.29	0.0
8	16.11	0.0	16.11	0.0	0.0	0.0
9	16.03	0.0	16.03	0.0	16.29	0.0
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	23.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.36	0.0	26.36	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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VOL CLASS 2 (WHITE SPRUCE 9/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.28	0.0	5.28	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	20.05	0.0
8	15.58	0.0	15.58	0.0	0.0	0.0
9	17.19	0.0	17.19	0.0	20.05	0.0
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.66	0.0	20.66	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VOL CLASS 3 (BALSAM FIR 9/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	20.05	0.0
8	12.51	0.0	12.51	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	20.05	0.0
10	13.24	0.0	13.24	0.0	0.0	0.0
11	13.54	0.0	13.54	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

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VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT				SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	NON-INTENSIVE HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	8.04	0.0	8.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	13.57	0.0
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.86	0.0	12.86	0.0	13.57	0.0
12	13.76	0.0	13.76	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

VOL CLASS 5 (SW-PL 6/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT				SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	NON-INTENSIVE HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	9.15	0.0	9.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	18.17	0.0
7	13.91	0.0	13.91	0.0	0.0	0.0
8	15.85	0.0	15.85	0.0	18.17	0.0
9	17.53	0.0	17.53	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.26	0.0	24.26	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

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YDL CLASS 6 (NS 6/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.81	0.0	4.81	0.0	0.0	0.0
6	9.99	0.0	9.99	0.0	14.30	0.0
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	14.30	0.0
9	8.75	0.0	8.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.75	0.0	10.75	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.53	0.0	11.53	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.36	0.0	12.36	0.0	0.0	0.0
17	12.63	0.0	12.63	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

YDL CLASS 7 (SH 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	9.83	0.0	9.83	0.0	0.0	0.0
6	11.39	0.0	11.39	0.0	14.30	0.0
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.89	0.0	14.89	0.0	14.30	0.0
9	15.90	0.0	15.90	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.31	0.0	15.31	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N37.S2A, NEW YIELD TABLES,FIR REG WS
ALT. E. CUT, REGEN=5,2 YR LAG,4% CULL,NORMAL STOCKING, MAY 28,1982.

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

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4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CRBE OUTPUT=R

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	1	2	3	4	5	6	7	8	9	10
A13,R, 2, 4 2216.000		55.91 (25.23)		60.74* (27.41)						
A11,R, 2, 4 746.552		17.01 (22.72)		18.89* (25.23)						
A11,R, 2, 5 2274.445		51.68 (22.72)			59.93* (26.35)					
A09,R, 2, 5 8423.000		135.65 (16.75)			154.28* (24.02)					
A07,R, 2, 5 18580.273		298.33 (16.11)			395.76* (21.30)					
A07,R, 2, 6 12306.469		198.28 (16.11)				279.80* (22.72)				
A07,R, 4, 6 1885.280				38.61 (19.75)		44.65* (22.72)				
A05,R, 4, 6 16296.582				262.54 (16.11)		321.66* (19.75)				
A05,R, 5, 6 13483.414						265.70 (19.75)	305.66* (22.72)			
A03,R, 6, 6 14437.000						232.58 (16.11)	285.13* (19.75)			
A01,R, 8,12 5834.000							89.22 (15.11)			
B13,R, 1, 3 9846.986	200.43 (20.35)		203.78* (20.68)							197.47 (20.05)
B11,R, 2, 4 11282.986		224.87 (19.93)		232.43* (20.60)						
B09,R, 2, 4		186.97		183.02*						

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VDL CLASS 6 (MW 6/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 6

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.94	0.0	7.94	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	14.30	0.0
7	12.62	0.0	12.62	0.0	0.0	0.0
8	13.88	0.0	13.88	0.0	14.30	0.0
9	14.81	0.0	14.81	0.0	0.0	0.0
10	15.52	0.0	15.52	0.0	0.0	0.0
11	16.06	0.0	16.06	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.99	0.0	16.99	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.23	0.0	17.23	0.0	0.0	0.0
17	17.28	0.0	17.28	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N37.52A, NEW YIELD TABLES,FIR REG WS
ALT. C. CUT, REGEN=5,2 YR LAG,4% CULL,NORMAL STOCKING, MAY 26,1982

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

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4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
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5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE: TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC) 1	2	3	4	5	6	7	8	9	10
A13,R, 2, 4 2216.000		55.51 (25.23)		60.74* (27.41)						
A11,R, 2, 4 748.553		17.01 (22.72)		18.89* (25.23)						
A11,R, 2, 5 3274.446		51.68 (22.72)			59.93* (26.35)					
A09,R, 2, 5 8423.000		126.85 (19.75)			154.28* (24.02)					
A07,R, 2, 5 18580.273		299.33 (16.11)			395.75* (21.30)					
A07,R, 2, 6 12306.469		198.25 (16.11)				279.80* (22.72)				
A07,R, 4, 6 1965.260				38.81 (19.75)		44.55* (22.72)				
A05,R, 4, 6 16296.582				262.54 (16.11)		321.86* (19.75)				
A05,R, 6, 8 13453.414						265.70 (19.75)		305.66* (22.72)		
A03,R, 6, 8 14437.000						232.68 (16.11)		285.13* (19.75)		
A01,R, 8,12 5538.000								89.22 (16.11)		
B13,R, 1, 3 9848.995	200.43 (20.35)		303.78* (20.69)							107.47 (20.05)
B11,R, 2, 4 11282.995		224.67 (19.93)		232.43* (20.60)						
B09,R, 2, 4		168.97		163.02*						

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	8162.996		(16.40)		(19.83)							
B07,R, 2, 5			59.07				66.51*					
	4432.996		(15.58)				(19.28)					
B05,R, 4, 6					38.75			46.98*				
	2852.000				(15.58)			(18.40)				
B03,R, 5, 5							38.51		45.48*			
	2472.000						(15.58)		(18.40)			
B01,R, 5,12									2.66			
	171.000								(15.58)			
C13,R, 1, 4		7.60			8.14*							
	536.661	(14.16)			(15.16)							
C13,R, 2, 4			123.52		129.32*							
	8530.137		(14.48)		(15.16)							
C11,R, 1, 4		58.51			62.45*							
	4361.996	(13.56)			(14.48)							
C09,R, 2, 4			23.70		24.78*							
	1765.000		(13.26)		(13.67)							
C07,R, 2, 4			83.10		88.88*							
	5043.996		(12.61)		(13.26)							
C05,R, 4, 6					11.80			12.63*				
	851.000				(12.51)			(13.26)				
C03,R, 5, 7							3.50		3.83*			
	298.000						(11.83)		(12.96)			
D13,R, 2, 4			159.67		172.63*							
	10449.000		(15.30)		(16.54)							
D11,R, 2, 4			103.17		114.55*							
	7487.000		(13.78)		(15.30)							
D09,R, 2, 4			161.83		186.83*							
	13703.000		(11.81)		(13.78)							
D07,R, 5, 7							176.41		202.27*			
	13873.000						(12.68)		(14.56)			
D05,R, 5, 5								181.74	212.06*			
	16366.996							(11.81)	(13.78)			
D03,R, 5, 5								244.33	319.20*			
	27027.996							(9.04)	(11.81)			
D01,R, 5,12									35.23			
	3897.000								(9.04)			
E13,R, 1, 3		419.60		448.67*							312.81	
	18245.000	(21.88)		(23.10)							(16.17)	
E11,R, 1, 3		118.38		126.93*							96.16	

	5947.004	(18.80)		(21.88)							(16.17)	
E11,R, 2, 4			186.22		180.88*							130.46
	8067.992		(20.85)		(22.42)							(16.17)
E09,R, 2, 4			202.01		223.82*							173.66
	10738.340		(18.81)		(20.85)							(16.17)
E09,R, 4, 7					184.79			182.57*				
	7903.680				(20.85)			(23.10)				
E07,R, 5, 7						351.06		382.48*				
	17841.996					(18.80)		(21.88)				
E05,R, 5, 7						194.36		220.78*				
	11095.000					(17.52)		(19.80)				
E03,R, 5, 5							192.21		226.86*			
	12060.996						(15.98)		(18.81)			
E01,R, 7, 9								18.06		22.78*		
	1300.122							(13.91)		(17.52)		
E01,R, 5,10									259.65		306.21*	
	16276.887								(15.95)		(18.81)	
F13,R, 1, 3		316.12		292.65*						286.63		
	20057.996	(15.86)		(14.80)						(14.30)		
F11,R, 1, 3		413.94		403.02*						383.36		
	28410.992	(18.29)		(15.86)						(14.30)		
F09,R, 1, 3		521.49		544.58*						478.03		
	33429.000	(15.60)		(16.28)						(14.30)		
F07,R, 2, 4			316.81		348.73*						310.44	
	21708.996		(14.89)		(16.11)						(14.30)	
F05,R, 5, 7						147.58		164.10*				
	9480.000					(15.60)		(18.28)				
F03,R, 6, 6							276.82		308.19*			
	19821.996						(13.68)		(15.52)			
F01,R, 7, 8								223.47		262.26*		
	17707.992							(12.62)		(14.81)		
G13,R, 1, 3		121.94		128.29*						161.37		
	10585.000	(11.52)		(12.12)						(14.30)		
G11,R, 1, 3		131.57		140.87*						174.88		
	12227.996	(10.76)		(11.52)						(14.30)		
G09,R, 1, 3		223.91		247.10*						328.40		
	22984.996	(9.75)		(10.76)						(14.30)		
G07,R, 5, 7						214.88		230.07*				
	18970.992					(10.76)		(11.52)				
G05,R, 5, 7						189.82		208.49*				

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19468.992					(9.75)		(10.75)			
G03,R, 5, 7					561.12		858.49*			
44452.766					(12.62)		(14.81)			
G03,R, 6, 8						398.96		446.09*		
28743.223						(13.88)		(15.52)		
G01,R, 7, 9							50.61		59.39*	
4010.000							(12.62)		(14.81)	
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	164735.69	154961.88	0.0	29668.50	136268.83	133495.44	23018.11	25884.87	149967.81	50365.32
M CUNITS	2536.26	2536.26	0.0	517.80	1840.77	1830.56	292.17	385.76	2191.84	812.03
HARVEST CUTS										
ACRES	0.0	0.0	159816.81	115863.69	31710.71	34071.30	144172.31	133495.44	23018.11	16276.87
M CUNITS	0.0	0.0	2536.26	2018.46	895.48	706.70	2244.09	2149.50	344.42	306.21
TOTAL CUTS										
ACRES	164735.69	154961.88	159816.81	145532.13	167979.31	167566.69	167190.38	159380.25	172985.88	66644.19
M CUNITS	2536.26	2536.26	2536.26	2536.26	2536.26	2536.26	2536.26	2536.26	2536.26	1118.23

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	11	12	13	14	15	16	17	18	19	20
A13,R, 2, 4	40.53		40.53*							40.53
2216.000	(18.29)		(18.29)							(18.29)
A11,R, 2, 4	13.69		13.69*							13.69
748.553	(18.29)		(18.29)							(18.29)
A11,R, 2, 5		41.60		41.60*						
2274.446		(18.29)		(18.29)						
A08,R, 2, 5		117.48		117.48*						
6423.000		(18.29)		(18.29)						
A07,R, 2, 5		339.83		339.83*						
18580.273		(18.29)		(18.29)						
A07,R, 2, 6			225.09		225.09*					
12308.469			(18.29)		(18.29)					
A07,R, 4, 6			35.94		35.94*					
1965.280			(18.29)		(18.29)					
A05,R, 4, 6			298.06		298.06*					
16296.582			(18.29)		(18.29)					
A05,R, 6, 8					245.05		245.05*			
13453.414					(18.29)		(18.29)			
A03,R, 6, 8					264.05		264.05*			
14437.000					(18.29)		(18.29)			
A01,R, 8,12		125.82*							101.29	
5538.000		(22.73)							(18.29)	
B13,R, 1, 3		197.47*							197.47	
9846.995		(20.05)							(20.05)	
B11,R, 2, 4	226.22		226.22*							226.22
11282.996	(20.05)		(20.05)							(20.05)
B09,R, 2, 4	184.12		184.12*							184.12

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9182.996	(20.05)			(20.05)														(20.05)		
B07,R, 2, 5			88.88			88.88*														
4432.996		(20.05)			(20.05)															
B05,R, 4, 5				51.17			51.17*													
2552.000				(20.05)			(20.05)													
B03,R, 6, 5						49.56			49.56*											
2472.000						(20.05)			(20.05)											
B01,R, 8,12			3.41*												3.43					
171.000		(19.93)													(20.05)					
C13,R, 1, 4	10.76			10.76*													10.76			
536.861	(20.05)			(20.05)													(20.05)			
C12,R, 2, 4	171.03			171.03*													171.03			
8530.137	(20.05)			(20.05)													(20.05)			
C11,R, 1, 4	87.88			87.88*													87.88			
4381.996	(20.05)			(20.05)													(20.05)			
C09,R, 2, 4	35.79			35.79*													35.79			
1785.000	(20.05)			(20.05)													(20.05)			
C07,R, 2, 4	101.13			101.13*													101.13			
5043.996	(20.05)			(20.05)													(20.05)			
C05,R, 4, 5				19.07			19.07*													
951.000				(20.05)			(20.05)													
C03,R, 5, 7						5.93			5.93*											
296.000					(20.05)			(20.05)												
D13,R, 2, 4				131.34			131.34*													
10449.000				(12.57)			(12.57)													
D11,R, 2, 4				94.11			94.11*													
7487.000				(12.57)			(12.57)													
D09,R, 2, 4				172.25			172.25*													
13703.000				(12.57)			(12.57)													
D07,R, 5, 7								174.38		174.38*										
13873.000								(12.57)		(12.57)										
D05,R, 6, 5									193.44		193.44*									
15388.996									(12.57)		(12.57)									
D03,R, 8, 5									339.74		339.74*									
27027.996									(12.57)		(12.57)									
D01,R, 8,12			53.70*																	
3887.000		(13.78)																		
E13,R, 1, 3	312.81*								312.81		312.81*									
18345.000	(16.17)								(16.17)		(16.17)									
E11,R, 1, 3	96.16*								96.16		96.16*									

5847.004	(16.17)								(16.17)		(16.17)									
E11,R, 2, 4			130.48*								130.48						130.48*			
8067.992			(16.17)								(16.17)						(16.17)			
E09,R, 2, 4			173.88*								173.88						173.88*			
10738.340			(16.17)								(16.17)						(16.17)			
E09,R, 4, 7				127.80			127.80*													
7903.660				(16.17)			(16.17)													
E07,R, 5, 7				285.27			285.27*													
17641.996				(16.17)			(16.17)													
E05,R, 5, 7				178.41			178.41*													
11035.000				(16.17)			(16.17)													
E03,R, 6, 5					194.88			194.88*												
12050.996					(16.17)			(16.17)												
E01,R, 7, 5						21.02			21.02*											
1300.122						(16.17)			(16.17)											
E01,R, 8,10								263.23		263.23*										
16278.867								(16.17)		(16.17)										
F13,R, 1, 3	286.83*								286.83		286.83*									
20057.996	(14.30)								(14.30)		(14.30)									
F11,R, 1, 3	383.38*								383.38		383.38*									
26810.992	(14.30)								(14.30)		(14.30)									
F09,R, 1, 3	478.03*								478.03		478.03*									
33429.000	(14.30)								(14.30)		(14.30)									
F07,R, 2, 4			310.44*								310.44						310.44*			
21708.996			(14.30)								(14.30)						(14.30)			
F05,R, 5, 7				135.28			135.28*													
9460.000				(14.30)			(14.30)													
F03,R, 6, 5					264.88			264.88*												
18521.996					(14.30)			(14.30)												
F01,R, 7, 5						253.22			253.22*											
17707.992						(14.30)			(14.30)											
G13,R, 1, 3	151.37*								151.37		151.37*									
10585.000	(14.30)								(14.30)		(14.30)									
G11,R, 1, 3	174.88*								174.88		174.88*									
12227.996	(14.30)								(14.30)		(14.30)									
G09,R, 1, 3	328.40*								328.40		328.40*									
22964.996	(14.30)								(14.30)		(14.30)									
G07,R, 5, 7				285.58			285.58*													
19970.992				(14.30)			(14.30)													
G05,R, 5, 7				278.41			278.41*													

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19483.992			(14.30)		(14.30)					
G03,R, 5, 7			835.62		835.62*					
44482.786			(14.30)		(14.30)					
G03,R, 6, 8				411.03		411.03*				
28743.223				(14.30)		(14.30)				
G01,R, 7, 9					57.34		57.34*			
4010.000					(14.30)		(14.30)			
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	43706.53	31710.71	195713.44	61012.21	52380.53	30151.67	192384.69	40516.33	15586.00	43706.53
M CUNITS	671.14	587.78	2954.60	886.71	691.27	437.61	2725.02	614.55	302.19	671.14
HARVEST CUTS										
ACRES	149967.81	59871.32	43706.53	31710.71	195713.44	61012.21	52380.53	30151.67	192384.69	40516.33
M CUNITS	2191.84	994.98	671.14	587.78	2954.60	886.71	691.27	437.61	2725.02	614.55
TOTAL CUTS										
ACRES	193674.31	91582.00	239421.94	92722.86	248093.94	91164.06	244765.19	70668.19	207943.63	84234.81
M CUNITS	3062.88	1582.76	3625.73	1484.90	3645.86	1324.32	3416.29	1052.17	3027.21	1285.69

+ = OVERSTORY REMOVAL CUT, * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME
ACRES CUT

TOTAL VOLUME CUT - M CUNITS
(VOLUME CUT / ACRE - CUNITS/AC)

	21	22	23	24	25	26	27	28	29	30
A13,R, 2, 4		40.53*								
2216.000		(18.29)								
A11,R, 2, 4		13.69*								
748.553		(18.29)								
A11,R, 2, 5	41.60		41.60*							
2274.445	(18.29)		(18.29)							
A09,R, 2, 5	117.46		117.46*							
6423.000	(18.29)		(18.29)							
A07,R, 2, 5	339.83		339.83*							
18580.273	(18.29)		(18.29)							
A07,R, 2, 6		225.09		225.09*						
12305.489		(18.29)		(18.29)						
A07,R, 4, 5		35.84		35.84*						
1959.260		(18.29)		(18.29)						
A05,R, 4, 5		296.06		296.06*						
16200.862		(18.29)		(18.29)						
A05,R, 6, 5				246.06						
13463.414				(18.29)						
A03,R, 6, 5				264.05						
14437.000				(18.29)						
A01,R, 6,12	101.38*									
5538.000	(18.29)									
B13,R, 1, 3	197.47*									
9848.996	(20.05)									
B11,R, 3, 4		225.22*								
11282.996		(20.05)								
B09,R, 3, 4		184.12*								

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5182.998		(20.05)		
B07,R, 2, 5 4432.998	88.88 (20.05)		88.88* (20.05)	
B05,R, 4, 5 2882.000		51.17 (20.05)		51.17* (20.05)
B03,R, 5, 5 2472.000				48.56 (20.05)
B01,R, 5,12 171.000	3.43* (20.05)			
C13,R, 1, 4 836.861		10.78* (20.05)		
C13,R, 2, 4 8830.137		171.03* (20.05)		
C11,R, 1, 4 4381.998		87.88* (20.05)		
C09,R, 2, 4 1788.000		35.78* (20.05)		
C07,R, 2, 4 5043.998		101.13* (20.05)		
C05,R, 4, 5 951.000		19.07 (20.05)		19.07* (20.05)
C03,R, 5, 7 296.000			5.93 (20.05)	
D13,R, 2, 4 10449.000				131.34 (12.57)
D11,R, 2, 4 7487.000				94.11 (12.57)
D09,R, 2, 4 13703.000				172.25 (12.57)
D07,R, 5, 7 13873.000				
D05,R, 5, 5 15386.998				
D03,R, 5, 5 27027.998				
D01,R, 5,12 3887.000	48.99 (12.57)		48.99* (12.57)	
E13,R, 1, 3 19348.000				
E11,R, 1, 3				

5847.004				
E11,R, 2, 4 8067.992				
E09,R, 2, 4 10738.340				
E05,R, 4, 7 7903.880	127.80 (16.17)		127.80* (16.17)	
E07,R, 5, 7 17641.998	285.27 (16.17)		285.27* (16.17)	
E05,R, 5, 7 11095.000	179.41 (16.17)		179.41* (16.17)	
E03,R, 5, 5 12050.998		194.86 (16.17)		194.86* (16.17)
E01,R, 7, 9 1300.122			21.02 (16.17)	
E01,R, 5,10 16278.867				263.23 (16.17)
F13,R, 1, 3 20067.998				
F11,R, 1, 3 25410.992				
F09,R, 1, 3 33439.000				
F07,R, 2, 4 21706.998				
F05,R, 5, 7 9480.000	135.28 (14.30)		135.28* (14.30)	
F03,R, 5, 5 19921.998		284.85 (14.30)		284.85* (14.30)
F01,R, 7, 9 17707.882			253.22 (14.30)	
G13,R, 1, 3 10585.000				
G11,R, 1, 3 12227.998				
G09,R, 1, 3 22964.998				
G07,R, 5, 7 19970.992	285.58 (14.30)		285.58* (14.30)	
G05,R, 5, 7	278.41		278.41*	

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19488.852 (14.30)			(14.30)							
C03,R, 5, 7	835.82		835.82*							
44482.788	(14.30)		(14.30)							
C03,R, 5, 6		411.03		411.03*						
28743.223		(14.30)		(14.30)						
C01,R, 7, 8			57.34							
4010.000			(14.30)							
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	185610.94	84787.44	23314.11	78280.25	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	2564.34	1520.11	337.52	1220.61	0.0	0.0	0.0	0.0	0.0	0.0
HARVEST CUTS										
ACRES	18558.00	43706.63	185610.94	84787.44	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	302.18	671.14	2564.34	1520.11	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CUTS										
ACRES	181168.88	138495.94	188826.00	173067.69	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	2866.53	2351.24	2901.87	2740.72	0.0	0.0	0.0	0.0	0.0	0.0

* = OVERSTORY REMOVAL CUT; + = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8
TOTAL OBJECTIVE VALUE = 22826.23 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,R, 2, 4	2216.00	116.68	52.64
A11,R, 2, 4	748.85	35.69	47.85
A11,R, 2, 5	2274.48	111.61	49.07
A05,R, 2, 5	6423.00	281.13	43.77
A07,R, 2, 5	18580.27	695.08	37.41
A07,R, 2, 6	12306.47	477.86	38.83
A07,R, 4, 6	1885.25	83.48	42.47
A05,R, 4, 5	18295.84	884.40	35.88
A05,R, 5, 5	13452.41	571.37	42.47
A03,R, 6, 5	14437.00	517.71	38.88
A01,R, 5,12	5536.00	88.22	15.11
B13,R, 1, 3	9848.00	404.20	41.04
B11,R, 2, 4	11283.00	457.30	40.53
B09,R, 2, 4	9163.00	351.98	38.33
B07,R, 2, 5	4433.00	154.58	34.87
B05,R, 4, 5	2852.00	96.72	33.86
B03,R, 6, 5	3472.00	84.00	33.98
B01,R, 5,12	171.00	2.98	15.56
C13,R, 1, 4	538.85	15.74	29.32
C13,R, 2, 4	8530.14	252.83	29.64
C11,R, 1, 4	4362.00	122.96	28.06
C09,R, 2, 4	1785.00	48.46	27.15
C07,R, 2, 4	5044.00	130.06	25.79
C05,R, 4, 6	951.00	24.53	25.79
C03,R, 5, 7	284.00	7.32	24.78
D13,R, 2, 4	10448.00	332.70	31.84
D11,R, 2, 4	7487.00	217.72	29.08
D09,R, 2, 4	13703.00	380.88	28.80
D07,R, 5, 7	13873.00	380.67	27.44
D05,R, 5, 5	15389.00	383.40	24.89
D03,R, 5, 5	27028.00	563.93	20.86
D01,R, 5,12	3887.00	35.23	9.04
E13,R, 1, 3	19345.00	1179.08	60.95
E11,R, 1, 3	5947.00	343.44	57.75
E11,R, 2, 4	6087.98	349.10	43.27
E09,R, 2, 4	10739.34	426.92	39.86
E09,R, 4, 7	7903.85	347.37	43.95
E07,R, 5, 7	17842.00	733.55	41.58
E05,R, 5, 7	11085.00	415.17	37.42
E03,R, 6, 5	12051.00	418.89	34.76
E01,R, 7, 8	1300.12	40.88	31.43
E01,R, 5,10	18278.87	288.85	15.85

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F13,R, 1, 3	26055.00	887.80	44.78	
F11,R, 1, 3	25410.99	1180.34	46.45	
F09,R, 1, 3	33429.00	1544.08	46.19	
F07,R, 2, 4	21709.00	988.84	30.80	
F05,R, 5, 7	9460.00	301.68	31.89	
F03,R, 6, 8	19822.00	585.71	29.40	
F01,R, 7, 9	17707.99	486.73	27.43	
G13,R, 1, 3	10688.00	401.88	37.84	
G11,R, 1, 3	12228.00	447.30	38.58	
G09,R, 1, 3	22865.00	799.41	34.81	
G07,R, 5, 7	19970.99	444.95	22.28	
G05,R, 5, 7	19488.99	399.31	20.61	
G03,R, 5, 7	44462.77	1219.61	27.43	
G03,R, 6, 8	28743.22	845.05	29.40	
G01,R, 7, 9	4010.00	109.99	27.43	

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WCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 22826.23 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2421.66 M CUNITS/DECADE

AVERAGE OF POST-CONVERSION PERIODIC HARVESTS=, 2422.40 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	184736.	2536.26	2536.26	0	0.0	0.0	184736.	2536.26	2536.26
2	0	0.0	0.0	154982.	2536.26	5072.52	0	0.0	0.0	154982.	2536.26	5072.52
3	0.	0.0	0.0	0.	0.0	5072.52	199817.	2536.26	2536.26	199817.	2536.26	7608.77
4	0.	0.0	0.0	28884.	517.80	5590.31	115884.	2018.48	4554.71	144822.	2536.26	10145.03
5	0.	0.0	0.0	136269.	1840.77	7431.09	31711.	895.46	5250.20	167979.	2536.26	12681.29
6	0.	0.0	0.0	133495.	1830.56	9261.64	34071.	705.70	5955.89	167567.	2536.26	15217.55
7	0.	0.0	0.0	23018.	292.17	9553.81	144172.	2244.08	8199.98	167190.	2536.26	17753.80
8	0.	0.0	0.0	25885.	386.76	9940.57	133495.	2149.50	10349.48	159380.	2536.26	20290.08
9	0.	0.0	0.0	149888.	2191.84	12132.40	23018.	344.42	10693.90	172988.	2536.26	22826.32
10	0.	0.0	0.0	50385.	812.03	12944.43	18278.	306.21	11000.11	68644.	1118.23	23944.55
11	0.	0.0	0.0	43709.	871.14	13815.56	148968.	2191.84	13191.94	192676.	3062.98	27007.52
12	0.	0.0	0.0	31711.	587.78	14403.35	89971.	994.98	14186.89	81682.	1582.75	28590.27
13	0.	0.0	0.0	195713.	2954.60	17357.95	43709.	871.14	15058.03	239422.	3825.73	32415.00
14	0.	0.0	0.0	61012.	896.71	18254.65	31711.	587.78	15645.82	92723.	1484.50	33900.50
15	0.	0.0	0.0	53381.	891.27	19145.92	195713.	2954.60	18600.41	249094.	3845.86	37746.37
16	0.	0.0	0.0	30152.	437.61	19583.53	61012.	896.71	19497.13	91164.	1334.32	39080.68
17	0.	0.0	0.0	192385.	2726.02	22306.55	53381.	891.27	20388.39	245766.	3616.29	42696.96
18	0.	0.0	0.0	40618.	616.55	22923.10	30152.	437.61	20826.00	70868.	1052.17	43749.14
19	0.	0.0	0.0	15556.	302.19	23225.29	192385.	2725.02	23551.02	207943.	3027.21	46776.35
20	0.	0.0	0.0	43709.	871.14	24096.43	40618.	614.65	24165.67	84225.	1485.69	48262.04
21	0.	0.0	0.0	165611.	2584.34	26680.77	15556.	302.19	24467.78	181189.	2886.53	51128.57
22	0.	0.0	0.0	94787.	1520.11	28180.87	43709.	871.14	25338.88	138496.	2391.24	53519.81
23	0.	0.0	0.0	23314.	337.52	28518.38	165611.	2584.34	27903.23	188925.	2901.87	56421.67
24	0.	0.0	0.0	78280.	1220.61	29738.00	94787.	1520.11	29423.34	173068.	2740.72	59162.38

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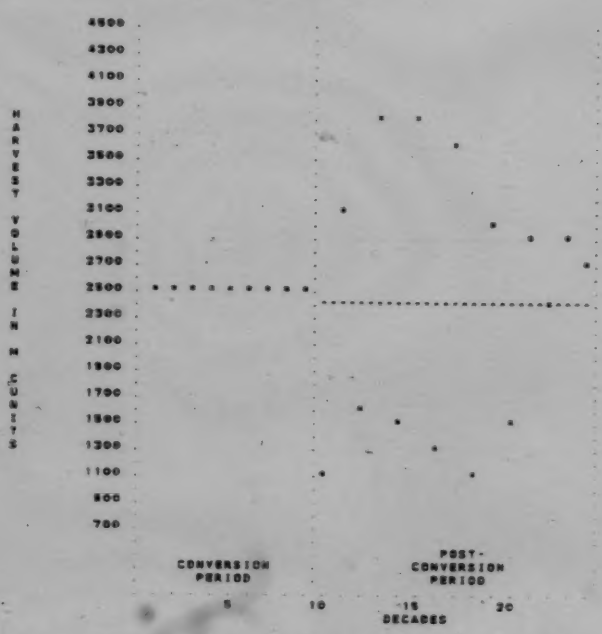
NCPI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ 8 PERIOD AVERAGE

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1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN N37.2A, NEW YIELD TABLES,FIR REG WS
ALT. C. CUT, REGEN=5,2 YR LAG,4% CULL,NORMAL STOCKING, MAY 28,1982.

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2000.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 5
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 18

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER AND UPPER BOUNDS

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.051
„POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAG*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE: IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED:

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	9	24		

NOTE: IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5. TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	0.885	1.00				
A11		11	L	1.298	1.00				
A09		9	L	2.554	1.00				
A07		7	L	13.141	1.00				
A05		5	L	11.800	1.00				
A03		3	L	5.775	1.00				
A01		1	L	2.215	1.00				
P13		13	L	1.330	1.00				
P11		11	L	1.614	1.00				
P09		9	L	3.894	1.00				
P07		7	L	19.711	1.00				
P05		5	L	17.858	1.00				
P03		3	L	8.562	1.00				
P01		1	L	3.323	1.00				
B13		13	L	9.849	1.00				
B11		11	L	11.263	1.00				
B09		9	L	9.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.582	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	0.067	1.00				
C11		11	L	6.382	1.00				
C09		9	L	1.765	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.951	1.00				
C03		3	L	0.288	1.00				
D13		13	L	10.445	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.873	1.00				
D05		5	L	16.288	1.00				
D03		3	L	27.026	1.00				
D01		1	L	3.897	1.00				
E13		13	L	7.736	1.00				
E11		11	L	5.808	1.00				
E09		9	L	7.457	1.00				
E07		7	L	7.057	1.00				
E05		5	L	4.438	1.00				
E03		3	L	4.420	1.00				
E01		1	L	7.032	1.00				
G13		13	L	11.607	1.00				
G11		11	L	8.408	1.00				
G09		9	L	11.188	1.00				
G07		7	L	10.585	1.00				
G05		5	L	6.687	1.00				
G03		3	L	7.231	1.00				
G01		1	L	10.547	1.00				
F13		13	L	20.088	1.00				
F11		11	L	25.411	1.00				
F09		9	L	23.439	1.00				
F07		7	L	21.709	1.00				
F05		5	L	9.489	1.00				
F03		3	L	19.833	1.00				
F01		1	L	17.708	1.00				

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C12	12	1	10.535	1.02
C11	11	1	12.239	1.04
C08	8	1	33.985	1.09
C07	7	1	15.671	1.06
C05	5	1	16.483	1.09
C03	3	1	73.298	1.08
C01	1	1	6.010	1.00

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 666.031 THOUSAND ACRES

6 MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT REG	MGMT CODES NON-REG	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF SUP SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A12	R		1	0	-1	1	1	4	3	8	3	5
A11	R		1	0	-1	1	1	6	3	8	3	5
A08	R		1	0	-1	1	1	8	3	10	3	5
A07	R		1	0	-1	1	1	10	3	12	3	5
A05	R		1	0	-1	1	3	12	5	14	3	5
A03	R		1	0	-1	1	5	14	7	16	3	5
A01	R		1	0	-1	1	7	16	9	18	3	5
P12	R		0	0	-1	0	1	5	3	8	2	4
P11	R		0	0	-1	0	1	7	3	8	2	4
P08	R		0	0	-1	0	1	9	3	10	2	4
P07	R		0	0	-1	0	1	11	3	12	2	4
P05	R		0	0	-1	0	3	13	5	14	2	4
P03	R		0	0	-1	0	5	15	8	16	2	4
P01	R		0	0	-1	0	7	17	8	18	2	4
B12	R		2	0	-1	0	1	4	3	8	3	5
B11	R		2	0	-1	0	1	6	3	8	3	5
B08	R		2	0	-1	0	1	8	3	10	3	5
B07	R		2	0	-1	0	1	10	3	12	3	5
B05	R		2	0	-1	0	3	12	5	14	3	5
B03	R		2	0	-1	0	5	14	7	16	3	5
B01	R		2	0	-1	0	7	16	9	18	3	5
C12	R		3	0	-1	0	1	4	3	8	3	5
C11	R		3	0	-1	0	1	6	3	8	3	5
C08	R		3	0	-1	0	1	8	3	10	3	5
C07	R		3	0	-1	0	1	10	3	12	3	5
C05	R		3	0	-1	0	3	12	5	14	3	5
C03	R		3	0	-1	0	5	14	7	16	3	5
C01	R		3	0	-1	0	7	16	9	18	3	5
D12	R		4	0	-1	0	1	4	3	8	3	5
D11	R		4	0	-1	0	1	6	3	8	3	5
D08	R		4	0	-1	0	1	8	3	10	3	5
D07	R		4	0	-1	0	1	10	3	12	3	5
D05	R		4	0	-1	0	3	12	5	14	3	5
D03	R		4	0	-1	0	5	14	7	16	3	5
D01	R		4	0	-1	0	7	16	9	18	3	5
E12	R		5	0	-1	0	1	4	3	8	3	5
E11	R		5	0	-1	0	1	6	3	8	3	5
E08	R		5	0	-1	0	1	8	3	10	3	5
E07	R		5	0	-1	0	1	10	3	12	3	5
E05	R		5	0	-1	0	3	12	5	14	3	5
E03	R		5	0	-1	0	5	14	7	16	3	5
E01	R		5	0	-1	0	7	16	9	18	3	5
F12	R		10	0	-1	0	1	6	2	8	2	4
F11	R		10	0	-1	0	1	7	2	8	2	4
F08	R		10	0	-1	0	1	9	2	10	2	4
F07	R		10	0	-1	0	1	11	2	12	2	4
F05	R		10	0	-1	0	3	13	4	14	2	4
F03	R		10	0	-1	0	5	15	6	16	2	4
F01	R		10	0	-1	0	7	17	6	18	2	4
P12	R		7	0	-1	1	1	4	3	8	3	5
P11	R		7	0	-1	1	1	6	3	8	3	5
P08	R		7	0	-1	1	1	8	3	10	3	5
P07	R		7	0	-1	1	1	10	3	12	3	5
P05	R		7	0	-1	1	3	12	5	14	3	5
P03	R		8	0	-1	1	5	14	7	16	3	5
P01	R		8	0	-1	1	7	16	9	18	3	5

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612	R	6	0	-1	1	1	4	3	8	3	5
611	R	6	0	-1	1	1	6	3	8	3	5
609	R	6	0	-1	1	1	8	3	10	3	5
607	R	6	0	-1	1	1	10	3	12	3	5
605	R	6	0	-1	1	3	12	5	14	3	5
603	R	6	0	-1	1	5	14	7	16	3	5
601	R	6	0	-1	1	7	16	9	18	3	6

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7. VOLUME DATA

VOL CLASS 1 (PINE 6/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	18.29	0.0
8	16.11	0.0	16.11	0.0	0.0	0.0
9	16.03	0.0	16.03	0.0	18.29	0.0
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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VOL CLASS 2 (WHITE SPRUCE B/A)
CLASS NUMBER 2

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.28	0.0	8.28	0.0	0.0	0.0
6	10.80	0.0	10.80	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	20.08	0.0
8	15.58	0.0	15.58	0.0	0.0	0.0
9	17.19	0.0	17.19	0.0	20.08	0.0
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.83	0.0	19.83	0.0	0.0	0.0
13	20.36	0.0	20.36	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.48	0.0	20.48	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VOL CLASS 3 (BALSAM FIR B/A, REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.26	0.0	7.26	0.0	0.0	0.0
6	10.84	0.0	10.84	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	20.05	0.0
8	12.61	0.0	12.61	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	20.05	0.0
10	13.28	0.0	13.28	0.0	0.0	0.0
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.46	0.0	14.46	0.0	0.0	0.0
15	14.61	0.0	14.61	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

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VOL CLASS 4 (BLACK SPRUCE 0/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	8.04	0.0	8.04	0.0	0.0	0.0
9	10.87	0.0	10.87	0.0	12.87	0.0
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.68	0.0	12.68	0.0	12.87	0.0
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	15.94	0.0	15.94	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

VOL CLASS 5 (SW-PL 0/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.18	0.0	8.18	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	16.17	0.0
7	13.91	0.0	13.91	0.0	0.0	0.0
8	16.05	0.0	16.05	0.0	16.17	0.0
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.26	0.0	24.26	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

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VOL CLASS 8 (MS 6/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.81	0.0	4.81	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	14.30	0.0
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	14.30	0.0
9	8.75	0.0	8.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.76	0.0	10.76	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 7 (SM 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	14.30	0.0
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.88	0.0	14.88	0.0	14.30	0.0
9	15.80	0.0	15.80	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.28	0.0	16.28	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.86	0.0	15.86	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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YDL CLASS 8 (MW 8/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.84	0.0	7.84	0.0	0.0	0.0
6	10.83	0.0	10.83	0.0	14.30	0.0
7	12.82	0.0	12.82	0.0	0.0	0.0
8	13.86	0.0	13.86	0.0	14.30	0.0
9	14.81	0.0	14.81	0.0	0.0	0.0
10	15.52	0.0	15.52	0.0	0.0	0.0
11	16.06	0.0	16.06	0.0	0.0	0.0
12	16.47	0.0	16.47	0.0	0.0	0.0
13	16.77	0.0	16.77	0.0	0.0	0.0
14	16.99	0.0	16.99	0.0	0.0	0.0
15	17.14	0.0	17.14	0.0	0.0	0.0
16	17.22	0.0	17.22	0.0	0.0	0.0
17	17.28	0.0	17.28	0.0	0.0	0.0
18	17.24	0.0	17.24	0.0	0.0	0.0

YDL CLASS 9 (PINE 8/4)
CLASS NUMBER 9

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.63	0.0	11.63	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	15.11	0.0	15.11	0.0	15.25	0.0
9	15.93	0.0	15.93	0.0	15.25	0.0
10	16.75	0.0	16.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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VOL CLASS 10 (SW-PL 8/4)
CLASS NUMBER 10

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.15	0.0	8.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	16.17	0.0
8	15.95	0.0	15.95	0.0	16.17	0.0
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.61	0.0	18.61	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.26	0.0	24.26	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN 837.3A. NEW YIELD TABLES,FIR REG WS
ALT. C CUT, REGEN=6.3 YR LAG,4% CULL,NORMAL STOCKING, MAY 28,1983.

GENERATED BY TIMBRAM MATRIX 06 PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CASE OUTPUT=R

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE' TVLO3 - HARVEST VOLUME' OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)								
	1	2	3	4	5	6	7	8	9	10
A13,R, 2, 4 885 000		22.28 (25.23)		24.29* (27.41)						
A11,R, 2, 4 1308 000		27.47 (22.72)		30.80* (25.23)						
A09,R, 3, 5 2585 000			54.72 (21.30)		61.71* (24.02)					
A07,R, 4, 5 13140 000				289.53 (18.75)		356.86* (22.72)				
A05,R, 5, 6 3725 291					67.17 (18.03)			84.84* (22.72)		
A06,R, 5, 5 8174 707						181.45 (19.75)		185.73* (22.72)		
A03,R, 5, 6 5774 000						93.04 (16.11)		114.06* (19.75)		
A01,R, 5,12 2215 000								35.66 (16.11)		
P13,R, 2, 3 1330 000		33.56 (25.23)	35.05* (26.35)							
P11,R, 2, 4 1814 000		41.21 (22.72)		46.77* (25.23)						
P09,R, 4, 5 3884 000				87.86 (22.72)	93.67* (24.02)					
P07,R, 4, 5 4881 000				82.66 (16.75)	89.83* (21.30)					
P07,R, 5, 6 15010 338					319.81 (21.30)	341.24* (22.72)				
P05,R, 5, 6					321.84	352.84*				

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17860.004								(18.03)	(18.78)											
P03,R, 5, 8 6572.012								77.67 (13.94)	89.77* (16.11)											
P03,R, 6, 7 3088.988									49.78 (16.11)	55.71* (16.03)										
P01,R, 7, 8 3323.000										46.32 (13.94)	53.53* (16.11)									
S13,R, 1, 3 9846.996	200.43 (20.35)			203.78* (20.69)													187.47 (20.06)			
S11,R, 2, 4 11282.996		224.87 (19.93)			232.43* (20.60)															
S08,R, 2, 4 9182.996		188.87 (18.40)			193.02* (19.93)															
S07,R, 3, 5 4432.996				76.20 (17.18)			85.51* (19.29)													
S05,R, 4, 6 2582.000					39.75 (15.58)				46.96* (18.40)											
S03,R, 5, 8 2472.000									38.61 (15.58)		45.48* (18.40)									
S01,R, 6,12 171.000											2.66 (15.58)									
C13,R, 2, 4 8087.000		131.39 (16.46)			137.48* (16.16)															
C11,R, 1, 3 2307.373	31.33 (13.58)			32.87* (14.16)													46.26 (20.06)			
C11,R, 2, 4 2074.827		28.78 (13.87)			30.04* (14.46)															
C09,R, 2, 4 1785.000		23.70 (13.28)			24.78* (13.87)															
C07,R, 2, 4 8043.996		83.10 (12.61)			86.86* (13.28)															
C05,R, 3, 5 881.000				11.25 (11.83)			12.32* (12.95)													
C03,R, 5, 7 288.000							3.50 (11.83)			3.83* (12.95)										
B13,R, 2, 4 10448.000		159.87 (15.30)			172.83* (16.54)															
B11,R, 2, 4 7487.000		103.17 (13.78)			114.59* (15.30)															
B08,R, 2, 4		161.63			168.63*															

13703.000		(11.81)			(13.78)															
D07,R, 5, 7 13873.000							178.41 (12.88)			202.27* (14.58)										
D05,R, 5, 8 19388.996								161.74 (11.61)			212.06* (15.78)									
D03,R, 6, 8 27027.996								244.33 (9.04)			319.20* (11.81)									
D01,R, 8,12 3897.000											35.23 (9.04)									
S13,R, 1, 3 7737.996	167.78 (21.68)			176.79* (23.10)										125.12 (16.17)						
S11,R, 1, 3 1022.827	20.35 (19.90)			22.17* (21.68)										16.83 (16.17)						
S11,R, 2, 4 4843.473		95.87 (20.68)			102.78* (22.42)												74.11 (16.17)			
S09,R, 2, 4 7468.996		140.27 (18.81)			155.48* (20.68)												120.58 (16.17)			
S07,R, 5, 7 7067.000							140.43 (19.90)			153.00* (21.68)										
S05,R, 5, 7 4437.996							77.75 (17.52)			86.23* (19.90)										
S03,R, 6, 8 4819.996								76.88 (15.95)			90.69* (18.81)									
S01,R, 8,10 7031.996											112.18 (15.95)						132.27* (18.81)			
D13,R, 1, 2 11907.000	251.04 (21.68)	280.23* (22.42)												187.89 (16.17)			187.89* (16.17)			
D11,R, 1, 2 8408.000	167.34 (19.90)	178.23* (20.68)												135.97 (16.17)			135.97* (16.17)			
D09,R, 2, 3 9977.979		167.68 (18.81)		186.58* (19.90)													161.34 (16.17)			
D09,R, 2, 4 1268.118		22.72 (18.81)			25.18* (20.68)															
D07,R, 5, 7 2985.832							89.46 (19.90)			84.78* (21.68)										
D07,R, 7, 8 7988.988										184.73 (21.68)	170.38* (22.42)									
D05,R, 7, 8 8888.988										132.47 (19.90)	136.80* (20.68)									
D03,R, 7, 8										126.09	136.03*									

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7330.996							(17.52)	(18.81)		
G01,R, 7, 8 10546.996							146.71 (13.91)	168.22* (15.96)		
F13,R, 1, 3 20057.996	318.12 (15.88)		282.85* (14.60)						286.83 (14.30)	
F11,R, 1, 3 26410.992	413.94 (16.29)		403.02* (15.88)						383.38 (14.30)	
F09,R, 1, 3 33429.000	521.49 (15.60)		544.56* (16.29)						478.03 (14.30)	
F07,R, 2, 4 21708.996		318.91 (14.69)		346.73* (16.11)						310.44 (14.30)
F05,R, 5, 7 9480.000					147.58 (15.60)		154.10* (16.29)			
F03,R, 6, 8 19821.996						276.52 (13.88)		309.19* (15.52)		
F01,R, 7, 9 17707.992							223.47 (12.62)		262.26* (14.81)	
G13,R, 1, 3 10585.000	121.84 (11.52)		128.29* (12.12)						151.37 (14.30)	
G11,R, 1, 3 12227.996	131.57 (10.76)		140.87* (11.52)						174.86 (14.30)	
G09,R, 1, 3 22964.996	223.91 (9.75)		247.10* (10.76)						328.40 (14.30)	
G07,R, 2, 4 19708.313		178.95 (9.08)		203.00* (10.30)						281.83 (14.30)
G07,R, 4, 7 262.678				2.71 (10.30)			3.03* (11.52)			
G05,R, 5, 7 19468.992					189.82 (9.75)		209.49* (10.76)			
G03,R, 5, 7 50258.480					634.26 (12.62)		744.33* (14.81)			
G03,R, 6, 8 22947.508						318.51 (13.88)		356.15* (15.52)		
G01,R, 7, 9 4010.000							50.61 (12.62)		59.39* (14.81)	
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	165608.75	139958.12	7952.99	24501.33	150004.88	109818.08	57074.04	13315.00	153452.38	75592.00
M CUNITS	2569.83	2134.27	142.17	482.22	2217.78	1440.75	891.00	185.74	2248.18	1192.04

HARVEST CUTS										
ACRES	0.0	20016.00	156900.63	128850.25	16498.65	54134.35	111191.06	145608.19	21717.99	27048.00
M CUNITS	0.0	435.56	2427.65	2087.60	352.04	1129.06	1678.83	2384.09	321.64	455.93
TOTAL CUTS										
ACRES	165608.75	159974.13	164853.56	153151.56	166503.50	163752.38	168265.06	158924.13	175170.31	102639.94
M CUNITS	2569.83	2569.82	2569.83	2569.82	2569.82	2569.82	2569.83	2569.83	2569.83	1647.97

* = OVERSTORY REMOVAL CUT; * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	11	12	13	14	15	16	17	18	19	20
A13,R, 2, 4 886.000	16.20 (18.29)		16.20* (18.29)							16.20 (18.29)
A11,R, 2, 4 1208.000	22.11 (18.29)		22.11* (18.29)							22.11 (18.29)
A09,R, 3, 5 2588.000		46.89 (18.29)		46.89* (18.29)						
A07,R, 4, 8 13140.986			240.35 (18.29)		240.35* (18.29)					
A05,R, 5, 8 3726.281					68.14 (18.29)		68.14* (18.29)			
A05,R, 6, 8 8174.707					149.52 (18.29)		149.52* (18.29)			
A03,R, 8, 8 5774.998					105.62 (18.29)		105.62* (18.29)			
A01,R, 8,12 2216.000		50.22* (22.72)							50.51 (18.29)	
P13,R, 2, 2 1330.000	24.33 (18.29)	24.33* (18.29)								24.33 (18.29)
P11,R, 2, 4 1814.000		33.18 (18.29)	33.18* (18.29)							
P09,R, 4, 5 3854.000			70.48 (18.29)	70.48* (18.29)						
P07,R, 4, 5 4881.660			89.81 (18.29)	89.81* (18.29)						
P07,R, 5, 6 15019.338				274.70 (18.29)	274.70* (18.29)					
P05,R, 5, 6 17880.004				326.48 (18.29)	326.48* (18.29)					
P03,R, 5, 6 5572.012				101.91 (18.29)	101.91* (18.29)					
P03,R, 6, 7 3089.989					56.52 (18.29)	56.52* (18.29)				
P01,R, 7, 8 3323.000						60.78 (18.29)	60.78* (18.29)			
B13,R, 1, 3 9848.998		197.67* (20.06)							197.67 (20.06)	
B11,R, 2, 4 11282.998	226.32 (20.06)		226.32* (20.06)							226.32 (20.06)
B09,R, 3, 4 9192.996	184.12 (20.06)		184.12* (20.06)							184.12 (20.06)
B07,R, 3, 5 4432.998		88.88 (20.06)		88.88* (20.06)						
B05,R, 4, 5 2552.000			51.17 (20.06)		51.17* (20.06)					
B03,R, 6, 8 2472.000					49.58 (20.06)		49.58* (20.06)			
B01,R, 8,12 171.000		3.43* (19.83)							3.43 (20.06)	
C13,R, 2, 4 9067.000	181.79 (20.06)		181.79* (20.06)							181.79 (20.06)
C11,R, 1, 3 2307.373		46.28* (20.06)							46.28 (20.06)	
C11,R, 2, 4 2074.627	41.60 (20.06)		41.60* 20.06)							41.60 (20.06)
C09,R, 2, 4 1785.000	35.79 (20.06)		35.79* 20.06)							35.79 (20.06)
C07,R, 2, 4 5043.998	101.13 (20.06)		101.13* (20.06)							101.13 (20.06)
C05,R, 3, 5 951.000		19.07 (20.06)		19.07* (20.06)						
C03,R, 6, 7 288.000				5.93 (20.06)		5.93* (20.06)				
D13,R, 2, 4 10449.000			131.34 (12.57)		131.34* (12.57)					
D11,R, 3, 4 7487.000			94.11 (12.57)		94.11* (12.57)					
D09,R, 2, 4			172.25		172.25*					

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13703.000			(12.57)		(12.57)					
007,R, 5, 7 13873.000						174.38 (12.57)		174.38* (12.57)		
008,R, 6, 8 18388.988							193.44 (12.57)		193.44* (12.57)	
003,R, 6, 8 27027.988							339.74 (12.57)		339.74* (12.57)	
001,R, 8,12 3897.000		53.70* (13.78)								
E13,R, 1, 3 7737.988	125.12* (18.17)						125.12 (18.17)		125.12* (18.17)	
E11,R, 1, 3 1022.527	18.53* (18.17)						18.53 (18.17)		18.53* (18.17)	
E11,R, 2, 4 4583.473		74.11* (18.17)						74.11 (18.17)		74.11* (18.17)
E09,R, 2, 4 7488.988		120.58* (18.17)						120.58 (18.17)		120.58* (18.17)
E07,R, 5, 7 7087.000			114.11 (18.17)		114.11* (18.17)					
E05,R, 5, 7 4437.988			71.78 (18.17)		71.78* (18.17)					
E03,R, 6, 8 4819.988				77.94 (18.17)		77.94* (18.17)				
E01,R, 8,10 7031.988						113.71 (18.17)		113.71* (18.17)		
013,R, 1, 2 11807.000							187.69 (18.17)	187.69* (18.17)		
011,R, 1, 2 8488.000							135.87 (18.17)	135.87* (18.17)		
009,R, 2, 3 9877.879	181.34* (18.17)							181.34 (18.17)	181.34* (18.17)	
008,R, 2, 4 1208.118	19.54 (18.17)	19.54* (18.17)							19.54 (18.17)	19.54* (18.17)
007,R, 5, 7 2985.832				48.30 (18.17)	48.30* (18.17)					
007,R, 7, 8 7598.088					122.88 (18.17)	122.88* (18.17)				
005,R, 7, 8 6685.898					107.84 (18.17)	107.84* (18.17)				
003,R, 7, 8					118.93	118.93*				

7230.898					(18.17)	(18.17)				
001,R, 7, 8 10548.898					170.54 (18.17)	170.54* (18.17)				
F13,R, 1, 3 20097.898	288.63* (14.30)						288.63 (14.30)		288.63* (14.30)	
F11,R, 1, 3 25410.982	363.38* (14.30)						363.38 (14.30)		363.38* (14.30)	
F09,R, 1, 3 33429.000	478.03* (14.30)						478.03 (14.30)		478.03* (14.30)	
F07,R, 2, 4 21708.898		310.44* (14.30)						310.44 (14.30)		310.44* (14.30)
F05,R, 5, 7 9480.000			135.28 (14.30)		135.28* (14.30)					
F03,R, 6, 8 19921.898				284.88 (14.30)		284.88* (14.30)				
F01,R, 7, 8 17707.892					253.22 (14.30)		253.22* (14.30)			
C13,R, 1, 3 10588.000	151.37* (14.30)						151.37 (14.30)		151.37* (14.30)	
C11,R, 1, 3 12227.898	174.88* (14.30)						174.88 (14.30)		174.88* (14.30)	
C09,R, 1, 3 22984.898	328.40* (14.30)						328.40 (14.30)		328.40* (14.30)	
C07,R, 2, 4 19708.313		281.83* (14.30)						281.83 (14.30)		281.83* (14.30)
C07,R, 4, 7 282.678			3.78 (14.30)		3.78* (14.30)					
C05,R, 5, 7 19488.892			278.41 (14.30)		278.41* (14.30)					
C03,R, 5, 7 50258.480			718.70 (14.30)		718.70* (14.30)					
C03,R, 6, 8 22847.508				328.15 (14.30)		328.15* (14.30)				
C01,R, 7, 8 4010.000					57.34 (14.30)		57.34* (14.30)			
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	43068.72	9765.99	146822.83	88413.75	78988.00	24227.89	195869.25	83435.65	18780.48	41861.61
M CUNITS	852.83	185.11	2187.83	1448.30	1267.90	348.87	2781.35	948.30	307.21	833.30

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HARVEST CUTS										
ACRES	143414.25	74435.25	42345.61	16498.65	179705.13	83108.50	45187.98	40921.00	185831.19	54695.89
M CUNITS	2085.87	1181.99	842.15	311.24	2762.62	1271.40	744.18	611.75	2619.05	806.50
TOTAL CUTS										
ACRES	188483.94	84202.19	189168.19	105912.38	256693.13	107336.44	241057.19	104356.63	201581.63	96527.50
M CUNITS	2936.70	1370.10	3009.68	1759.53	4020.51	1620.27	3525.55	1560.05	2926.28	1639.79

* = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	21	22	23	24	25	26	27	28	29	30
A13,R, 2, 4 886.000		16.20* (18.29)								
A11,R, 2, 4 1209.000		22.11* (18.29)								
A09,R, 3, 5 2589.000	46.99 (18.29)		46.99* (18.29)							
A07,R, 4, 6 13140.996		240.35 (18.29)		240.35* (18.29)						
A05,R, 5, 8 3725.291				68.14 (18.29)						
A05,R, 5, 8 8174.707				149.52 (18.29)						
A03,R, 6, 8 5774.996				105.62 (18.29)						
A01,R, 8,12 2215.000	40.51* (18.29)									
P13,R, 2, 3 1330.000	24.33* (18.29)									
P11,R, 2, 4 1814.000	33.18 (18.29)	33.18* (18.29)								
P09,R, 4, 5 3854.000		70.49 (18.29)	70.49* (18.29)							
P07,R, 4, 5 4891.660		85.81 (18.29)	85.81* (18.29)							
P07,R, 5, 6 15019.336			274.70 (18.29)	274.70* (18.29)						
P05,R, 5, 6			326.48	326.48*						

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17550.000			(18.29)	(18.29)
P02,R, 5, 5			101.91	101.91*
5572.012			(18.29)	(18.29)
P03,R, 5, 7				56.52
3089.989				(18.29)
P01,R, 7, 8				
3323.000				
B13,R, 1, 2	197.47*			
9848.998	(20.05)			
B11,R, 2, 4		225.22*		
11262.996		(20.05)		
B09,R, 2, 4		184.12*		
9182.995		(20.05)		
B07,R, 3, 5	86.58		86.58*	
4482.996	(20.05)		(20.05)	
B05,R, 4, 8		51.17		51.17*
2882.000		(20.05)		(20.05)
B03,R, 6, 8				49.59
2472.000				(20.05)
B01,R, 8,12	3.42*			
171.000	(20.05)			
C13,R, 2, 4		181.78*		
9067.000		(20.05)		
C11,R, 1, 3	46.28*			
2307.272	(20.05)			
C11,R, 2, 4		41.60*		
2074.627		(20.05)		
C09,R, 2, 4		35.78*		
1785.000		(20.05)		
C07,R, 2, 4		101.13*		
5043.998		(20.05)		
C05,R, 3, 5	19.07		19.07*	
951.000	(20.05)		(20.05)	
C03,R, 5, 7			5.93	
296.000			(20.05)	
D13,R, 2, 4				131.34
10449.000				(12.57)
D11,R, 2, 4				94.11
7487.000				(12.57)
D09,R, 2, 4				172.26

13703.000				(12.57)
D07,R, 5, 7				
13873.000				
D05,R, 6, 8				
18388.996				
D03,R, 6, 8				
27027.996				
D01,R, 8,12	48.89		48.89*	
3887.000	(12.57)		(12.57)	
E13,R, 1, 2				
7737.996				
E11,R, 1, 2				
1022.527				
E11,R, 2, 4				
4583.473				
E09,R, 2, 4				
7498.998				
E07,R, 5, 7	114.11		114.11*	
7057.000	(18.17)		(18.17)	
E05,R, 5, 7	71.78		71.78*	
4437.998	(18.17)		(18.17)	
E03,R, 6, 8		77.94		77.94*
4818.998		(18.17)		(18.17)
E01,R, 8,10				113.71
7031.998				(18.17)
O13,R, 1, 2				
11607.000				
O11,R, 1, 2				
8403.000				
O09,R, 2, 3				
9877.875				
O09,R, 2, 4				
1208.118				
O07,R, 5, 7		46.30	46.30*	
2986.932		(18.17)	(18.17)	
O07,R, 7, 8			122.88	122.88*
7986.068			(18.17)	(18.17)
O05,R, 7, 8			107.84	107.84*
8896.998			(18.17)	(18.17)
O03,R, 7, 8			116.93	116.93*

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7230.998			(16.17)	(16.17)							
001,R, 7, 8			170.54	170.54*							
10548.998			(16.17)	(16.17)							
F13,R, 1, 3											
20057.495											
F11,R, 1, 3											
25410.892											
F09,R, 1, 3											
33429.000											
F07,R, 2, 4											
21708.998											
F05,R, 5, 7	135.28		135.28*								
9480.000	(14.30)		(14.30)								
F03,R, 6, 8		284.88		284.88*							
19821.998		(14.30)		(14.30)							
F01,R, 7, 8			283.22								
17707.892			(14.30)								
G13,R, 1, 3											
10585.000											
G11,R, 1, 3											
12227.998											
G09,R, 1, 3											
22984.998											
G07,R, 2, 4											
19708.313											
G07,R, 4, 7	3.78		3.78*								
282.678	(14.30)		(14.30)								
G05,R, 5, 7	278.41		278.41*								
19468.892	(14.30)		(14.30)								
G03,R, 5, 7	718.70		718.70*								
50258.480	(14.30)		(14.30)								
G03,R, 6, 8		328.15		328.15*							
22947.508		(14.30)		(14.30)							
G01,R, 7, 8			57.34								
4010.000			(14.30)								
OVERSTORY REMOVAL CUTS											
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
INTERMEDIATE CUTS											
ACRES	104609.13	74915.05	92488.31	81907.98	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	1859.11	1167.09	1537.57	840.76	0.0	0.0	0.0	0.0	0.0	0.0	
HARVEST CUTS											
ACRES	15872.36	42345.81	114327.89	133856.83	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	312.00	842.15	1730.53	2203.56	0.0	0.0	0.0	0.0	0.0	0.0	
TOTAL CUTS											
ACRES	120481.44	117260.83	206815.00	195784.56	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	1871.11	2029.24	3268.10	3144.32	0.0	0.0	0.0	0.0	0.0	0.0	

- = OVERSTORY REMOVAL CUT, * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8
TOTAL OBJECTIVE VALUE = 23126.32 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,R, 2, 4	888.00	46.84	52.64
A11,R, 2, 4	1208.00	57.97	47.95
A09,R, 3, 5	2588.00	116.43	45.32
A07,R, 4, 6	13141.00	558.10	42.47
A06,R, 5, 8	3725.28	151.81	40.75
A05,R, 5, 8	8174.71	347.18	42.47
A03,R, 6, 8	5775.00	207.09	35.86
A01,R, 8,12	2218.00	35.58	16.11
P13,R, 2, 3	1330.00	68.80	51.58
P11,R, 2, 4	1814.00	85.88	47.98
P09,R, 4, 5	3854.00	180.14	46.74
P07,R, 4, 5	4691.85	192.59	41.08
P07,R, 5, 6	15019.34	661.15	44.02
P05,R, 5, 8	17850.00	674.37	37.78
P03,R, 5, 8	5572.01	167.44	30.06
P03,R, 6, 7	3089.99	105.49	34.14
P01,R, 7, 8	2323.00	69.85	30.06
B13,R, 1, 3	9849.00	404.20	41.04
B11,R, 2, 4	11283.00	467.30	40.53
B09,R, 2, 4	9183.00	351.96	38.33
B07,R, 3, 5	4433.00	161.72	36.48
B05,R, 4, 6	2652.00	86.72	32.98
B03,R, 6, 6	2472.00	84.00	33.98
B01,R, 8,12	171.00	2.66	15.58
C13,R, 2, 4	9087.00	258.75	28.64
C11,R, 1, 3	2307.37	64.01	27.74
C11,R, 2, 4	2074.83	58.82	28.35
C09,R, 2, 4	1788.00	48.48	27.15
C07,R, 2, 4	5044.00	130.08	25.79
C05,R, 3, 5	951.00	23.57	24.78
C03,R, 5, 7	295.00	7.33	24.78
D13,R, 2, 4	10449.00	332.70	31.84
D11,R, 2, 4	7487.00	217.72	29.08
D09,R, 2, 4	13703.00	350.55	25.58
D07,R, 5, 7	13873.00	380.87	27.44
D05,R, 6, 8	15388.00	393.80	25.59
D03,R, 6, 8	27026.00	563.53	20.85
D01,R, 8,12	3897.00	35.23	9.04
E13,R, 1, 3	7736.00	471.83	60.95
E11,R, 1, 3	1022.53	89.05	87.78
E11,R, 2, 4	4583.47	198.33	43.27
E09,R, 2, 4	7457.00	295.74	39.65
E07,R, 5, 7	7057.00	293.43	41.58
E05,R, 5, 7	4438.00	166.07	37.42
E03,R, 6, 8	4820.00	167.54	34.76
E01,R, 8,10	7032.00	112.16	15.95
O13,R, 1, 2	11807.00	699.55	60.27
O11,R, 1, 2	8408.00	476.64	56.92
O09,R, 2, 3	9877.88	386.24	38.71
O09,R, 2, 4	1208.12	47.91	39.68
O07,R, 5, 7	2986.93	124.20	41.58
O07,R, 7, 8	7598.07	335.07	44.10
O05,R, 7, 8	8657.00	271.27	40.75
O03,R, 7, 8	7231.00	262.70	36.33
O01,R, 7, 8	10547.00	314.93	29.85
F13,R, 1, 3	20058.00	897.80	44.76
F11,R, 1, 3	25410.95	1180.34	46.45
F09,R, 1, 3	33429.00	1544.08	46.18
F07,R, 2, 4	21709.00	658.84	30.60
F05,R, 5, 7	9480.00	301.68	31.83
F03,R, 6, 8	19822.00	585.71	29.40
F01,R, 7, 9	17707.99	485.73	27.43
G13,R, 1, 3	10585.00	401.59	37.94
G11,R, 1, 3	12228.00	447.30	36.58
G09,R, 1, 3	22885.00	799.41	34.81
G07,R, 2, 4	19708.31	381.85	19.38
G07,R, 4, 7	282.88	5.73	21.82
G05,R, 5, 7	19468.99	398.31	20.51
G03,R, 5, 7	50258.48	1378.59	27.43
G03,R, 6, 8	22847.51	674.66	29.40
G01,R, 7, 9	4010.00	108.99	27.43

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 23126.32 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2421.65 M CUNITS/DECADE

AVERAGE OF POST-CONVERSION PERIODIC HARVESTS= 2432.06 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	185605.	2569.83	2569.83	0.	0.0	0.0	185605.	2569.83	2569.83
2	0.	0.0	0.0	139855.	2134.27	4704.09	20016.	435.86	435.86	159874.	2569.82	5139.65
3	0.	0.0	0.0	7853.	142.17	4846.25	168901.	2427.85	2863.21	184884.	2569.83	7709.47
4	0.	0.0	0.0	24601.	482.22	5328.48	128850.	2067.80	4930.81	163152.	2569.82	10278.30
5	0.	0.0	0.0	150008.	2217.78	7546.27	15499.	352.04	5302.86	165504.	2569.82	12848.12
6	0.	0.0	0.0	109818.	1440.76	8987.03	54134.	1128.08	6431.81	163752.	2569.82	15418.95
7	0.	0.0	0.0	57076.	891.00	9878.02	111181.	1678.83	8110.73	168285.	2569.83	17988.77
8	0.	0.0	0.0	13319.	185.74	10063.75	145809.	2384.09	10494.82	159824.	2569.83	20558.59
9	0.	0.0	0.0	153452.	2248.18	12311.94	21718.	321.84	10816.48	175170.	2569.83	23128.42
10	0.	0.0	0.0	78592.	1192.04	13503.98	27068.	455.93	11272.38	105660.	1647.97	24776.39
11	0.	0.0	0.0	43070.	852.83	14356.81	143414.	2085.87	13358.25	186484.	2938.70	27715.08
12	0.	0.0	0.0	9767.	188.11	14544.92	74435.	1151.98	14510.24	84202.	1370.10	29085.18
13	0.	0.0	0.0	146823.	2167.83	16712.45	42348.	642.15	15382.39	189186.	3009.98	32094.88
14	0.	0.0	0.0	85414.	1468.30	18180.75	18488.	311.24	15693.62	105912.	1789.53	33884.39
15	0.	0.0	0.0	76988.	1357.80	19418.54	179705.	2782.62	18456.24	256693.	4020.51	37874.90
16	0.	0.0	0.0	24228.	348.87	19767.51	83109.	1271.40	19727.63	107336.	1620.27	39495.17
17	0.	0.0	0.0	185885.	2761.36	22548.87	45188.	744.13	20471.81	241057.	3525.85	43020.71
18	0.	0.0	0.0	62438.	948.30	23497.17	40821.	611.75	21083.56	104287.	1560.05	44580.77
19	0.	0.0	0.0	15750.	307.21	23804.38	185821.	2819.08	23702.61	201562.	3126.28	47707.02
20	0.	0.0	0.0	41862.	833.30	24637.68	54868.	806.50	24509.10	96536.	1638.78	49145.82
21	0.	0.0	0.0	104809.	1888.11	26186.79	15872.	312.00	24821.10	120481.	1871.11	51017.93
22	0.	0.0	0.0	74815.	1187.08	27383.88	42345.	642.15	25463.25	117281.	2029.24	53047.16
23	0.	0.0	0.0	92488.	1537.57	28921.44	114328.	1730.83	27383.78	206818.	3268.10	56315.25
24	0.	0.0	0.0	61908.	960.78	29882.20	133857.	2203.55	29587.33	195765.	3164.32	59479.57

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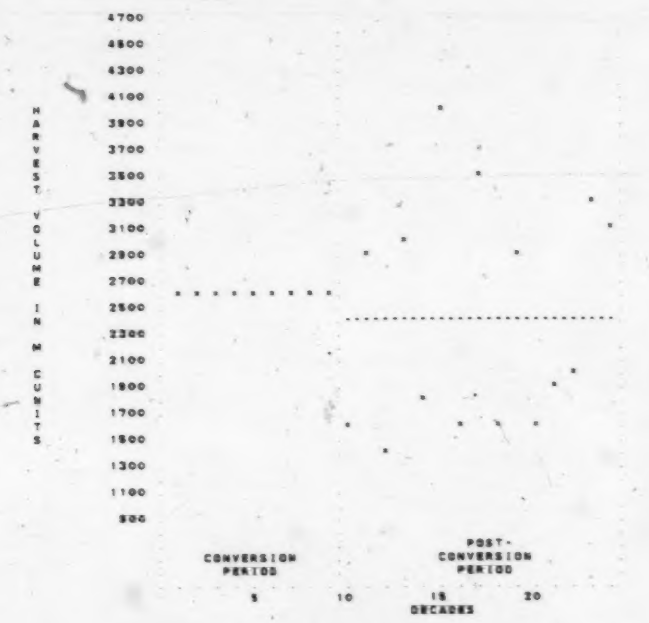
NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

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19. Appendix 7: Combined Program Printouts

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1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN N38A, COMBINED IM.,FIR REG WS
ALT. C CUT, REGEN=5,2 YR LAG,4% CULL,NORMAL STOCKING, JUNE 8,1982.

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2600.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 3
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 18

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER BOUNDS ONLY

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

('NOTE' UPPER CONSTRAINTS ARE IGNORED IN THE 'LOWER BOUNDS ONLY' OPTION)

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.100
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3 PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAG*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE' IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4 ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED'

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	9	24		

NOTE' IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5 TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	0.888	1.00				
A11		11	L	1.209	1.00				
A09		9	L	2.589	1.00				
A07		7	L	13.141	1.00				
A05		5	L	11.500	1.00				
A03		3	L	5.775	1.00				
A01		1	L	2.215	1.00				
P13		13	L	1.330	1.00				
P11		11	L	1.414	1.00				
P09		9	L	3.884	1.00				
P07		7	L	19.711	1.00				
P05		5	L	17.850	1.00				
P03		3	L	8.882	1.00				
P01		1	L	3.323	1.00				
B13		13	L	5.849	1.00				
B11		11	L	11.283	1.00				
B09		9	L	9.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.552	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	9.087	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.788	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.951	1.00				
C03		3	L	0.296	1.00				
D13		13	L	10.449	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.873	1.00				
D05		5	L	15.289	1.00				
D03		3	L	27.028	1.00				
D01		1	L	3.897	1.00				
E13		13	L	7.738	1.00				
E11		11	L	5.606	1.00				
E09		9	L	7.457	1.00				
E07		7	L	7.057	1.00				
E05		5	L	4.438	1.00				
E03		3	L	4.820	1.00				
E01		1	L	7.032	1.00				
G13		13	L	11.807	1.00				
G11		11	L	8.409	1.00				
G09		9	L	11.185	1.00				
G07		7	L	10.585	1.00				
G05		5	L	6.657	1.00				
G03		3	L	7.231	1.00				
G01		1	L	10.547	1.00				
F13		13	L	20.058	1.00				
F11		11	L	25.411	1.00				
F09		9	L	33.429	1.00				
F07		7	L	21.709	1.00				
F05		5	L	9.480	1.00				
F03		3	L	19.822	1.00				
F01		1	L	17.708	1.00				

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C13	13	L	10.585	1.00
C11	11	L	12.228	1.00
C09	9	L	22.955	1.00
C07	7	L	19.971	1.00
C05	5	L	19.488	1.00
C03	3	L	73.206	1.00
C01	1	L	4.010	1.00

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 666.031 THOUSAND ACRES

6 MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT REC	CODES NON-GEN.	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF IMP SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	C		1	0	4	1	1	2	3	5	3	5
A13	I		9	0	6	1	3	6	5	6	3	5
A11	C		1	0	4	1	1	2	3	5	3	5
A11	I		9	0	6	1	3	6	5	6	3	5
A09	C		1	0	4	1	1	2	3	5	3	5
A09	I		9	0	6	1	3	8	5	10	3	5
A07	C		1	0	4	1	1	2	3	5	3	5
A07	I		9	0	6	1	3	10	5	12	3	5
A05	I		9	0	6	1	3	12	5	14	3	5
A03	I		9	0	6	1	5	14	7	16	3	5
A03	D		31	0	6	1	5	14	7	16	3	5
A01	I		9	0	6	1	7	16	9	18	3	5
A01	D		22	0	6	1	7	16	9	18	3	5
P13	C		23	0	3	1	1	2	2	3	2	4
P13	I		24	0	5	1	3	5	4	6	2	4
P11	C		23	0	3	1	1	2	2	3	2	4
P11	I		24	0	5	1	3	7	4	8	2	4
P09	C		23	0	3	1	1	2	2	3	2	4
P09	I		24	0	5	1	3	9	4	10	2	4
P07	C		23	0	3	1	1	2	2	3	2	4
P07	I		24	0	5	1	3	11	4	12	2	4
P05	I		24	0	5	1	3	13	4	14	2	4
P03	I		24	0	5	1	5	15	6	16	2	4
P03	D		28	0	5	1	5	15	6	16	2	4
P01	I		24	0	5	1	7	17	8	18	2	4
P01	D		28	0	5	1	7	17	8	18	2	4
B13	C		2	0	4	1	1	2	3	5	3	5
B13	I		10	0	6	1	3	4	5	6	3	5
B11	C		2	0	4	1	1	2	3	5	3	5
B11	I		10	0	6	1	3	4	5	6	3	5
B11	T		11	0	-1	1	5	6	7	8	3	5
B09	C		2	0	4	1	1	2	3	5	3	5
B09	I		10	0	6	1	3	4	5	6	3	5
B09	T		11	0	-1	1	5	8	7	10	3	5
B07	C		2	0	4	1	1	2	3	5	3	5
B07	I		10	0	6	1	3	4	5	6	3	5
B07	T		11	0	-1	1	5	10	7	12	3	5
B05	I		10	0	6	1	3	4	5	6	3	5
B05	T		11	0	-1	1	5	12	7	14	3	5
B03	T		11	0	-1	1	5	14	7	16	3	5
B01	T		11	0	-1	1	7	16	9	18	3	5
C13	C		3	0	4	1	1	2	3	5	3	5
C13	I		12	0	6	1	3	4	5	6	3	5
C11	C		3	0	4	1	1	2	3	5	3	5
C11	I		12	0	6	1	3	4	5	6	3	5
C11	T		13	0	-1	1	5	6	7	8	3	5
C09	C		3	0	4	1	1	2	3	5	3	5
C09	I		12	0	6	1	3	4	5	6	3	5
C09	T		13	0	-1	1	5	8	7	10	3	5
C07	C		3	0	4	1	1	2	3	5	3	5
C07	I		12	0	6	1	3	4	5	6	3	5
C07	T		13	0	-1	1	5	10	7	12	3	5
C05	I		12	0	6	1	3	4	5	6	3	5
C05	T		13	0	-1	1	5	12	7	14	3	5
C03	I		12	0	6	1	5	14	7	16	3	5

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D13	G	4	0	4	1	1	2	3	5	3	5	
D13	I	14	0	8	1	3	4	5	8	3	5	
D11	G	4	0	4	1	1	2	3	5	3	5	
D11	I	14	0	8	1	3	6	5	8	3	5	
D09	G	4	0	4	1	1	2	3	5	3	5	
D09	I	14	0	8	1	3	8	5	10	3	5	
D07	G	4	0	4	1	1	2	3	5	3	5	
D07	I	14	0	8	1	3	10	5	12	3	5	
D05	I	14	0	8	1	3	12	5	14	3	5	
D03	I	4	0	8	1	5	14	7	16	3	5	
D01	I	14	0	8	1	7	16	9	18	3	5	
M13	G	5	0	4	1	1	2	3	5	3	5	
M13	I	15	0	8	1	3	4	5	8	3	5	
M11	G	5	0	4	1	1	2	3	5	3	5	
M11	I	15	0	8	1	3	6	5	8	3	5	
M09	G	5	0	4	1	1	2	3	5	3	5	
M09	I	15	0	8	1	3	8	5	10	3	5	
M07	G	5	0	4	1	1	2	3	5	3	5	
M07	I	15	0	8	1	3	10	5	12	3	5	
M05	I	15	0	8	1	3	12	5	14	3	5	
M03	I	5	0	8	1	5	14	7	16	3	5	
M01	I	15	0	8	1	7	16	9	18	3	5	
P13	G	27	0	3	1	1	2	3	2	2	4	
P13	I	28	0	8	1	3	5	6	8	2	4	
P11	G	27	0	3	1	1	2	3	2	2	4	
P11	I	28	0	8	1	3	7	6	8	2	4	
P09	G	27	0	3	1	1	2	3	2	2	4	
P09	I	28	0	8	1	3	9	6	10	2	4	
P07	G	27	0	3	1	1	2	3	2	2	4	
P07	I	28	0	8	1	3	11	6	12	2	4	
P05	I	28	0	8	1	3	13	6	14	2	4	
P03	I	28	0	8	1	5	15	8	16	2	4	
P01	I	28	0	8	1	7	17	8	18	2	4	
F13	G	7	0	4	1	1	2	3	5	3	5	
F13	I	18	0	8	1	3	4	5	8	3	5	
F11	G	7	0	4	1	1	2	3	5	3	5	
F11	I	18	0	8	1	3	4	5	8	3	5	
F11	T	20	0	-1	1	5	8	7	8	3	5	
F09	G	7	0	4	1	1	2	3	5	3	5	
F09	I	19	0	8	1	3	4	5	8	3	5	
F09	T	20	0	-1	1	5	8	7	10	3	5	
F07	G	7	0	4	1	1	2	3	5	3	5	
F07	C	18	0	4	1	1	2	3	6	3	5	
F07	I	19	0	8	1	3	4	5	8	3	5	
F07	D	28	0	8	1	3	4	5	8	3	5	
F07	T	20	0	-1	1	5	10	7	12	3	5	
F07	N	30	0	-1	1	5	10	7	12	3	5	
F05	I	19	0	8	1	3	4	5	8	3	5	
F05	D	31	0	8	1	3	4	5	8	3	5	
F05	T	20	0	-1	1	5	12	7	14	3	5	
F05	N	32	0	-1	1	5	12	7	14	3	5	
F03	T	20	0	-1	1	5	14	7	16	3	5	
F03	N	8	0	-1	1	5	14	7	16	3	5	
F01	T	20	0	-1	1	7	16	9	18	3	5	
F01	N	8	0	-1	1	7	16	9	18	3	5	
G13	C	6	0	4	1	1	2	3	5	3	5	
G13	I	16	0	8	1	3	4	5	8	3	5	
G11	C	6	0	4	1	1	2	3	5	3	5	
G11	I	16	0	8	1	3	4	5	8	3	5	
G11	T	17	0	-1	1	5	6	7	8	3	5	

G09	C	6	0	4	1	1	2	3	5	3	5	
G09	I	16	0	8	1	3	4	5	8	3	5	
G09	T	17	0	-1	1	5	8	7	10	3	5	
G07	C	6	0	4	1	1	2	3	5	3	5	
G07	C	33	0	4	1	1	2	3	5	3	5	
G07	I	16	0	8	1	3	4	5	8	3	5	
G07	D	34	0	8	1	3	4	5	8	3	5	
G07	T	17	0	-1	1	5	10	7	12	3	5	
G07	N	35	0	-1	1	5	10	7	12	3	5	
G05	I	16	0	8	1	3	4	5	8	3	5	
G05	D	36	0	8	1	3	4	5	8	3	5	
G05	T	17	0	-1	1	5	12	7	14	3	5	
G05	N	37	0	-1	1	5	12	7	14	3	5	
G03	T	17	0	-1	1	5	14	7	16	3	5	
G03	N	8	0	-1	1	5	14	7	16	3	5	
G01	T	17	0	-1	1	7	16	9	18	3	5	
G01	N	8	0	-1	1	7	16	9	18	3	5	

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7. VOLUME DATA

VOL CLASS 1 (PINE 6/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.46	0.0	8.46	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	18.29	20.12
8	16.11	0.0	16.11	0.0	0.0	0.0
9	18.03	0.0	18.03	0.0	21.86	23.78
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.36	0.0	26.36	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 2 (WHITE SPRUCE 6/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.28	0.0	8.28	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	20.05	20.05
8	15.56	0.0	15.56	0.0	0.0	0.0
9	17.19	0.0	17.19	0.0	23.56	26.07
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.48	0.0	20.48	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

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VOL CLASS 3 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	20.05	20.05
8	12.81	0.0	12.81	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	23.66	26.07
10	13.28	0.0	13.28	0.0	0.0	0.0
11	13.56	0.0	13.56	0.0	0.0	0.0
12	13.67	0.0	13.67	0.0	0.0	0.0
13	14.16	0.0	14.16	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 11

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	8.04	0.0	8.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.57	13.19
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.66	0.0	12.66	0.0	13.70	14.45
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

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VOL CLASS 5 (SW-PL 8/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.18	0.0	8.18	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	18.17	17.79
7	13.81	0.0	13.81	0.0	0.0	0.0
8	15.88	0.0	15.88	0.0	18.08	21.02
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.80	0.0	19.80	0.0	0.0	0.0
12	20.65	0.0	20.65	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 6 (HS 8/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	6.99	0.0	6.99	0.0	14.30	14.30
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.09	0.0	9.09	0.0	15.72	16.87
9	9.75	0.0	9.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.75	0.0	10.75	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

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VOL CLASS 7 (SH 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	14.30	14.30
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.88	0.0	14.88	0.0	18.72	18.87
9	16.80	0.0	16.80	0.0	0.0	0.0
10	18.11	0.0	18.11	0.0	0.0	0.0
11	18.29	0.0	18.29	0.0	0.0	0.0
12	18.19	0.0	18.19	0.0	0.0	0.0
13	18.88	0.0	18.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.80	0.0	14.80	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.81	0.0	11.81	0.0	0.0	0.0

VOL CLASS 8 (MW - AW 6/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.84	0.0	7.84	0.0	0.0	0.0
6	11.18	0.0	11.18	0.0	18.58	0.0
7	14.74	0.0	14.74	0.0	0.0	0.0
8	17.47	0.0	17.47	0.0	18.58	0.0
9	19.57	0.0	19.57	0.0	0.0	0.0
10	21.14	0.0	21.14	0.0	0.0	0.0
11	22.24	0.0	22.24	0.0	0.0	0.0
12	22.91	0.0	22.91	0.0	0.0	0.0
13	23.17	0.0	23.17	0.0	0.0	0.0
14	23.05	0.0	23.05	0.0	0.0	0.0
15	22.55	0.0	22.55	0.0	0.0	0.0
16	21.69	0.0	21.69	0.0	0.0	0.0
17	20.48	0.0	20.48	0.0	0.0	0.0
18	18.92	0.0	18.92	0.0	0.0	0.0

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VOL CLASS 9 (PINE 6/4)
CLASS NUMBER 9

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.42	0.0	11.42	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	31.59	23.78
8	16.11	0.0	16.11	0.0	0.0	0.0
9	18.03	0.0	18.03	0.0	33.78	33.78
10	19.78	0.0	19.78	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 10 (WHITE SPRUCE 6/4)
CLASS NUMBER 10

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.26	0.0	8.26	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	22.05	23.85
8	15.84	0.0	15.84	0.0	0.0	0.0
9	17.19	0.0	17.19	0.0	25.07	25.07
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

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YDL CLASS 11 (WHITE SPRUCE B/S)
CLASS NUMBER 11

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.26	0.0	8.26	0.0	0.0	0.0
6	10.90	0.0	10.90	0.0	0.0	0.0
7	12.43	0.0	12.43	0.0	38.07	0.0
8	15.86	0.0	15.86	0.0	0.0	0.0
9	17.19	0.0	17.19	0.0	38.07	0.0
10	18.40	0.0	18.40	0.0	0.0	0.0
11	18.28	0.0	18.28	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.48	0.0	20.48	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

YDL CLASS 12 (BALSAM FIR B/S,REGENERATES AS WS)
CLASS NUMBER 12

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.94	0.0	10.94	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	22.08	23.85
8	13.81	0.0	13.81	0.0	0.0	0.0
9	12.93	0.0	12.93	0.0	38.07	26.07
10	13.38	0.0	13.38	0.0	0.0	0.0
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.67	0.0	13.67	0.0	0.0	0.0
13	14.16	0.0	14.16	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.61	0.0	14.61	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.93	0.0	15.93	0.0	0.0	0.0

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VOL CLASS 13 (BALSAM FIR 6/4 REGENERATES AS WS)
CLASS NUMBER 13

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	28.07	0.0
8	12.51	0.0	12.51	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	28.07	0.0
10	13.28	0.0	13.28	0.0	0.0	0.0
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.16	0.0	14.16	0.0	0.0	0.0
14	14.46	0.0	14.46	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.18	0.0	15.18	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

VOL CLASS 14 (BLACK SPRUCE - PINE 6/4)
CLASS NUMBER 14

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 11

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	13.70	14.45
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.86	0.0	12.86	0.0	14.45	14.45
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

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VOL CLASS 15 (SW-PL 6/4)
CLASS NUMBER 15

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	18.08	21.02
7	13.81	0.0	13.81	0.0	0.0	0.0
8	15.85	0.0	15.85	0.0	21.02	21.02
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.66	0.0	21.66	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 16 (MS 6/4)
CLASS NUMBER 16

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.99	0.0	8.99	0.0	15.72	16.87
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.08	0.0	9.08	0.0	18.58	18.58
9	9.75	0.0	9.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.76	0.0	10.76	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

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VOL CLASS 17 (HS 6/4)
CLASS NUMBER 17

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.81	0.0	4.81	0.0	0.0	0.0
6	8.88	0.0	8.88	0.0	18.88	0.0
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.08	0.0	9.08	0.0	18.88	0.0
9	8.78	0.0	8.78	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.78	0.0	10.78	0.0	0.0	0.0
12	11.18	0.0	11.18	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 18 (SH - AW II 6/4)
CLASS NUMBER 18

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	14.30	14.30
7	13.30	0.0	13.30	0.0	0.0	0.0
8	15.75	0.0	15.75	0.0	18.72	18.87
9	17.80	0.0	17.80	0.0	0.0	0.0
10	18.85	0.0	18.85	0.0	0.0	0.0
11	19.55	0.0	19.55	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.58	0.0	19.58	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

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VDL CLASS 19 (SH 6/4)
CLASS NUMBER 19

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.63	0.0	8.63	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	15.72	18.47
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.89	0.0	14.89	0.0	18.58	18.58
9	15.80	0.0	15.80	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

VDL CLASS 20 (SH 6/4)
CLASS NUMBER 20

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.63	0.0	8.63	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	15.58	0.0
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.89	0.0	14.89	0.0	15.58	0.0
9	15.80	0.0	15.80	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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VDL CLASS 21 (SPACED PINE 8/4)
CLASS NUMBER 21

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.86	0.0	8.86	0.0	0.0	0.0
6	12.31	0.0	12.31	0.0	0.0	0.0
7	15.19	0.0	15.19	0.0	21.56	23.76
8	17.55	0.0	17.55	0.0	0.0	0.0
9	19.47	0.0	19.47	0.0	23.76	23.76
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.16	0.0	24.16	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.79	0.0	27.79	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.76	0.0	30.76	0.0	0.0	0.0

VDL CLASS 22 (SPACED PINE 8/4)
CLASS NUMBER 22

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	9.71	0.0	9.71	0.0	0.0	0.0
6	12.87	0.0	12.87	0.0	0.0	0.0
7	15.38	0.0	15.38	0.0	21.56	23.76
8	17.55	0.0	17.55	0.0	0.0	0.0
9	19.47	0.0	19.47	0.0	23.76	23.76
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.16	0.0	24.16	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.79	0.0	27.79	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.76	0.0	30.76	0.0	0.0	0.0

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VOL CLASS 23 (PINE 8/4)
CLASS NUMBER 23

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	18.29	20.12
9	18.03	0.0	18.03	0.0	20.12	21.88
10	19.76	0.0	19.76	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 24 (PINE 8/4)
CLASS NUMBER 24

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	21.58	23.78
9	18.03	0.0	18.03	0.0	23.78	23.78
10	19.76	0.0	19.76	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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VOL CLASS 25 (SPACED PINE 6/4)
CLASS NUMBER 25

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.88	0.0	8.88	0.0	0.0	0.0
6	12.31	0.0	12.31	0.0	0.0	0.0
7	15.19	0.0	15.19	0.0	0.0	0.0
8	17.55	0.0	17.55	0.0	21.54	33.74
9	19.47	0.0	19.47	0.0	33.74	33.74
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.18	0.0	24.18	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.79	0.0	27.79	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.78	0.0	30.78	0.0	0.0	0.0

VOL CLASS 26 (SPACED PINE 6/4)
CLASS NUMBER 26

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	9.71	0.0	9.71	0.0	0.0	0.0
6	12.87	0.0	12.87	0.0	0.0	0.0
7	15.38	0.0	15.38	0.0	0.0	0.0
8	17.55	0.0	17.55	0.0	21.54	33.74
9	19.47	0.0	19.47	0.0	33.74	33.74
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.18	0.0	24.18	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.79	0.0	27.79	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.78	0.0	30.78	0.0	0.0	0.0

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VDL CLASS 27 (SW-PL 6/4)
CLASS NUMBER 27

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	15.17	17.78
8	15.85	0.0	15.85	0.0	17.78	18.08
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VDL CLASS 28 (SW-PL 6/4)
CLASS NUMBER 28

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	19.08	21.02
8	15.85	0.0	15.85	0.0	21.02	21.02
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

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VOL CLASS 29 (SH-AW II 8/4)
CLASS NUMBER 29

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	15.72	18.87
7	13.30	0.0	13.30	0.0	0.0	0.0
8	15.75	0.0	15.75	0.0	18.58	18.58
9	17.60	0.0	17.60	0.0	0.0	0.0
10	18.88	0.0	18.88	0.0	0.0	0.0
11	19.55	0.0	19.55	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.66	0.0	19.66	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

VOL CLASS 30 (SH-AW II 8/4)
CLASS NUMBER 30

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	18.58	0.0
7	13.30	0.0	13.30	0.0	0.0	0.0
8	15.75	0.0	15.75	0.0	18.58	0.0
9	17.60	0.0	17.60	0.0	0.0	0.0
10	18.88	0.0	18.88	0.0	0.0	0.0
11	19.55	0.0	19.55	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.66	0.0	19.66	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

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VOL CLASS 31 (SH-AW I 8/4)
CLASS NUMBER 31

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.87	0.0	11.87	0.0	18.72	18.87
7	14.83	0.0	14.83	0.0	0.0	0.0
8	17.28	0.0	17.28	0.0	18.58	18.58
9	19.14	0.0	19.14	0.0	0.0	0.0
10	20.40	0.0	20.40	0.0	0.0	0.0
11	21.11	0.0	21.11	0.0	0.0	0.0
12	21.32	0.0	21.32	0.0	0.0	0.0
13	21.08	0.0	21.08	0.0	0.0	0.0
14	20.42	0.0	20.42	0.0	0.0	0.0
15	19.37	0.0	19.37	0.0	0.0	0.0
16	17.96	0.0	17.96	0.0	0.0	0.0
17	16.20	0.0	16.20	0.0	0.0	0.0
18	14.13	0.0	14.13	0.0	0.0	0.0

VOL CLASS 32 (SH-AW I 8/4)
CLASS NUMBER 32

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.87	0.0	11.87	0.0	18.58	0.0
7	14.83	0.0	14.83	0.0	0.0	0.0
8	17.28	0.0	17.28	0.0	18.58	0.0
9	19.14	0.0	19.14	0.0	0.0	0.0
10	20.40	0.0	20.40	0.0	0.0	0.0
11	21.11	0.0	21.11	0.0	0.0	0.0
12	21.32	0.0	21.32	0.0	0.0	0.0
13	21.08	0.0	21.08	0.0	0.0	0.0
14	20.42	0.0	20.42	0.0	0.0	0.0
15	19.37	0.0	19.37	0.0	0.0	0.0
16	17.96	0.0	17.96	0.0	0.0	0.0
17	16.20	0.0	16.20	0.0	0.0	0.0
18	14.13	0.0	14.13	0.0	0.0	0.0

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VOL CLASS 33 (HS-AW II 6/4)
CLASS NUMBER 33

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	5.89	0.0	5.89	0.0	14.30	14.30
7	8.21	0.0	8.21	0.0	0.0	0.0
8	10.32	0.0	10.32	0.0	15.72	15.87
9	11.71	0.0	11.71	0.0	0.0	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.81	0.0	12.81	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.55	0.0	11.55	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

VOL CLASS 34 (HS-AW II 6/4)
CLASS NUMBER 34

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	5.89	0.0	5.89	0.0	15.72	15.87
7	8.21	0.0	8.21	0.0	0.0	0.0
8	10.32	0.0	10.32	0.0	15.58	15.58
9	11.71	0.0	11.71	0.0	0.0	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.81	0.0	12.81	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.55	0.0	11.55	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

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VOL CLASS 35 (HS-AW II 8/4)
CLASS NUMBER 35

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	18.56	0.0
7	8.21	0.0	8.21	0.0	0.0	0.0
8	10.32	0.0	10.32	0.0	18.56	0.0
9	11.71	0.0	11.71	0.0	0.0	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.61	0.0	12.61	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.86	0.0	11.86	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

VOL CLASS 36 (HS-AW I 8/4)
CLASS NUMBER 36

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	11.73	0.0	11.73	0.0	15.72	15.87
7	14.84	0.0	14.84	0.0	0.0	0.0
8	17.07	0.0	17.07	0.0	18.56	18.56
9	18.44	0.0	18.44	0.0	0.0	0.0
10	19.17	0.0	19.17	0.0	0.0	0.0
11	19.35	0.0	19.35	0.0	0.0	0.0
12	19.05	0.0	19.05	0.0	0.0	0.0
13	18.30	0.0	18.30	0.0	0.0	0.0
14	17.12	0.0	17.12	0.0	0.0	0.0
15	15.54	0.0	15.54	0.0	0.0	0.0
16	13.59	0.0	13.59	0.0	0.0	0.0
17	11.88	0.0	11.88	0.0	0.0	0.0
18	11.88	0.0	11.88	0.0	0.0	0.0

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VOL CLASS 37 (NS-AW I 6/4)
CLASS NUMBER 37

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	11.73	0.0	11.73	0.0	18.58	0.0
7	14.84	0.0	14.84	0.0	0.0	0.0
8	17.07	0.0	17.07	0.0	18.58	0.0
9	18.44	0.0	18.44	0.0	0.0	0.0
10	18.17	0.0	18.17	0.0	0.0	0.0
11	18.35	0.0	18.35	0.0	0.0	0.0
12	18.05	0.0	18.05	0.0	0.0	0.0
13	18.30	0.0	18.30	0.0	0.0	0.0
14	17.13	0.0	17.13	0.0	0.0	0.0
15	15.64	0.0	15.64	0.0	0.0	0.0
16	13.59	0.0	13.59	0.0	0.0	0.0
17	11.88	0.0	11.88	0.0	0.0	0.0
18	11.88	0.0	11.88	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN M38A, COMBINED IM ,FIR REG WS
ALT. C. CUT, REGEN=5,3 YR LAG,4% CULL,NORMAL STOCKING, JUNE 8,1982.

GENERATED BY TIMBRAM MATRIX GN PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CASE OUTPUT=R

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME
ACRES CUT — TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)

	1	2	3	4	5	6	7	8	9	10
A13.C, 2, 4 386.000		22.35 (25.23)		26.29* (27.41)						
A11.C, 3, 4 1209.000		27.47 (22.72)		30.58* (25.23)						
A09.C, 2, 5 2554.834		50.45 (19.75)			61.36* (24.02)					
A05.I, 4, 6 14.382				0.33 (22.72)		0.38* (25.23)				
A07.I, 4, 6 70.003				1.38 (19.75)		1.59* (22.72)				
A07.I, 5, 7 13070.986					276.41 (21.30)		313.97* (24.02)			
A05.I, 5, 7 11899.986					214.88 (18.03)		253.47* (21.30)			
A03.D, 6, 8 5774.986						101.38 (17.55)		122.37* (21.19)		
A01.D, 7, 8 2215.000							36.07 (16.28)		43.13* (19.47)	
P13.C, 2, 3 1330.000		33.56 (25.23)	35.05* (26.35)							
P11.I, 4, 5 1814.000				48.77 (26.23)	47.90* (25.35)					
P09.I, 4, 5 3854.000				87.56 (22.72)	92.57* (24.02)					
P07.I, 5, 8 19710.986					419.36 (21.30)	447.83* (22.72)				
P05.I, 5, 6					82.87	89.78*				

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4596.313						(18.03)	(19.75)					
P05,I, 5, 7							261.75	282.30*				
13253.886							(19.75)	(21.30)				
P03,D, 6, 7							58.49	84.88*				
3332.778							(17.55)	(19.47)				
P03,D, 7, 8								103.75	112.93*			
5329.219								(19.47)	(21.19)			
P01,D, 7, 8								51.11	58.32*			
3323.000								(15.38)	(17.55)			
B13,G, 2, 4		202.89		203.38*								
9846.996		(20.60)		(20.65)								
B11,G, 2, 4		224.87		232.43*								
11242.986		(19.93)		(20.80)								
B09,G, 2, 4		186.87		183.02*								
9182.996		(18.40)		(19.93)								
B07,I, 4, 5				81.57			88.35*					
4432.986				(18.40)			(19.93)					
B05,T, 5, 7						43.87		49.23*				
2552.000						(17.19)		(19.29)				
B03,T, 6, 8							38.51		45.48*			
2472.000							(15.58)		(18.40)			
B01,T, 7, 8								2.30		2.94*		
171.000								(13.43)		(17.19)		
C13,G, 2, 4		131.29		137.48*								
8087.000		(14.48)		(15.16)								
C11,G, 2, 4		80.78		83.48*								
4361.996		(13.87)		(14.48)								
C09,G, 2, 4		23.70		24.78*								
1785.000		(13.28)		(13.87)								
C07,G, 2, 4		83.10		88.98*								
6043.996		(12.51)		(13.28)								
C05,I, 3, 5			11.25			12.32*						
851.000			(11.83)			(12.95)						
C03,I, 5, 7						3.50		3.83*				
296.000						(11.83)		(12.95)				
D13,G, 2, 4		159.87		172.83*								
10448.000		(15.30)		(16.54)								
D11,G, 2, 4		103.17		114.55*								
7487.000		(13.78)		(15.30)								
D09,G, 2, 4		181.83		188.83*								

13703.000		(11.81)		(13.78)								
D07,I, 5, 7						178.41		202.27*				
13873.000						(12.86)		(14.58)				
D05,I, 5, 7						80.81		98.32*				
7645.152						(10.57)		(12.86)				
D05,I, 6, 8							91.45		106.71*			
7743.844							(11.81)		(13.78)			
D03,I, 6, 8							244.33		319.20*			
27027.996							(9.04)		(11.81)			
D01,I, 7, 8								27.58		41.19*		
3897.000								(7.08)		(10.57)		
E13,G, 2, 4		173.49		183.47*							137.66	
7737.996		(22.42)		(23.71)							(17.79)	
E11,G, 2, 4		116.89		128.89*							99.73	
5605.996		(20.85)		(22.42)							(17.79)	
E09,G, 2, 4		140.27		158.48*							132.86	
7488.996		(18.81)		(20.85)							(17.79)	
E07,I, 5, 7						140.43		153.00*				
7057.000						(19.90)		(21.88)				
E05,I, 5, 7						77.75		88.32*				
4437.996						(17.52)		(19.90)				
E03,I, 6, 8							76.88		90.88*			
4819.996							(15.95)		(18.81)			
E01,I, 7, 8								97.82		123.20*		
7031.996								(13.91)		(17.52)		
O12,G, 1, 2	247.35	255.79*								184.48	202.87*	
11409.038	(21.68)	(22.42)								(16.17)	(17.79)	
O12,G, 2, 3		4.44	4.57*								3.52	
197.960		(22.42)	(23.10)								(17.79)	
O11,G, 1, 2	187.34	175.33*								135.97	148.60*	
8409.000	(19.90)	(20.85)								(16.17)	(17.79)	
O09,G, 1, 2	112.95	121.28*								104.25	116.70*	
6447.375	(17.52)	(18.81)								(16.17)	(17.79)	
O09,I, 4, 5				98.80	102.73*							
4738.621				(20.85)	(21.68)							
O07,I, 4, 5				198.10	210.64*							
10585.000				(18.81)	(19.90)							
O05,I, 5, 7						116.83		132.47*				
8656.996						(17.52)		(19.90)				
O03,I, 7, 8								126.88	136.02*			

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7230.996							(17.82)	(18.81)		
001,I, 7, 8							146.71	188.22*		
10548.996							(13.91)	(15.95)		
F13,C, 1, 3	318.12	292.88*							286.83	
20057.996	(15.86)	(14.60)							(14.30)	
F11,C, 1, 3	413.94	403.02*							383.38	
25410.992	(16.29)	(15.86)							(14.30)	
F09,C, 1, 3	521.49	544.58*							478.03	
33429.000	(15.60)	(16.29)							(14.30)	
F07,C, 2, 4	0.81	0.97*								0.74
51.466	(15.75)	(18.86)								(14.30)
F07,C, 3, 5	381.17		424.05*							
21857.531	(17.80)		(19.58)							
F05,N, 5, 7			181.05			189.70*				
9480.000			(19.14)			(21.11)				
F03,N, 6, 8				348.04			421.15*			
19921.996				(17.47)			(21.14)			
F01,N, 7, 9					281.02				348.58*	
17707.992					(14.74)				(18.57)	
G13,C, 1, 3	121.94	126.28*							151.37	
10585.000	(11.52)	(12.13)							(14.30)	
G11,C, 1, 3	131.57	140.67*							174.88	
12227.996	(10.76)	(11.82)							(14.30)	
G09,C, 1, 3	223.81	247.10*							326.40	
22864.996	(9.75)	(10.78)							(14.30)	
G07,C, 1, 3	183.96	233.88*							265.58	
18870.992	(8.21)	(11.71)							(14.30)	
G05,N, 5, 7			358.01			376.73*				
19468.992			(18.44)			(19.35)				
G03,N, 8, 8				1278.91			1547.57*			
73205.938				(17.47)			(21.14)			
G01,N, 7, 9					59.11				78.48*	
4010.000					(14.74)				(18.57)	
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	170812.19	109261.75	22606.52	25506.98	120725.19	157553.19	81463.20	0.0	170812.19	21050.41
M CUNITS	2422.56	1870.19	382.42	514.51	2177.16	2498.73	910.16	0.0	2493.18	374.31
HARVEST CUTS										
ACRES	0.0	26265.41	146174.75	105179.19	48154.79	28824.67	113004.38	167396.88	35032.99	26265.41

M CUNITS	0.0	552.38	2030.18	1908.07	851.48	628.51	2218.48	3128.64	635.48	487.28
TOTAL CUTS										
ACRES	170812.19	135527.13	168783.25	130686.13	168879.94	186377.81	194467.88	167396.88	205845.13	47316.82
M CUNITS	2422.56	2422.56	2422.56	2422.56	3128.64	3128.64	3128.64	3128.64	3128.64	861.57

- = OVERSTORY REMOVAL CUT; "*" = HARVEST CUT

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MCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	11	12	13	14	15	16	17	18	19	20
A13,G, 2, 4 588.000	17.83 (20.12)		21.07* (23.78)							17.83 (20.12)
A11,G, 2, 4 1209.000	24.33 (20.12)		28.76* (23.78)							24.33 (20.12)
A09,G, 2, 5 2884.638		51.40 (20.12)		80.75* (23.78)						
A09,I, 4, 6 14.362			0.34 (23.78)		0.34* (23.78)					
A07,I, 4, 6 70.003			1.66 (23.78)		1.66* (23.78)					
A07,I, 5, 7 13070.998				310.83 (23.78)		310.83* (23.78)				
A05,I, 5, 7 11898.998				282.98 (23.78)		282.98* (23.78)				
A03,D, 6, 8 5774.998					137.33 (23.78)		137.33* (23.78)			
A01,D, 7, 8 2216.000						52.67 (23.78)		52.67* (23.78)		
P13,G, 2, 3 1330.000	26.78 (20.12)	28.70* (21.58)								26.78 (20.12)
P11,I, 4, 5 1814.000			43.14 (23.78)	43.14* (23.78)						
P09,I, 4, 5 3884.000			91.65 (23.78)	91.65* (23.78)						
P07,I, 5, 6 19710.998				468.73 (23.78)	468.73* (23.78)					
P05,I, 5, 6				108.30	108.30*					

4656.313				(23.78)	(23.78)					
P05,I, 6, 7 13253.688					315.17 (23.78)	315.17* (23.78)				
P03,D, 6, 7 3332.778					79.25 (23.78)	79.25* (23.78)				
P03,D, 7, 8 5328.219						126.73 (23.78)	126.73* (23.78)			
P01,D, 7, 8 3323.000						79.02 (23.78)	79.02* (23.78)			
B13,G, 2, 4 9844.998	197.47 (20.05)		286.78* (26.07)							197.47 (20.05)
B11,G, 2, 4 11282.998	226.22 (20.05)		294.18* (26.07)							226.22 (20.05)
B09,G, 2, 4 9182.998	184.12 (20.05)		339.40* (26.07)							184.12 (20.05)
B07,I, 4, 6 4432.998			104.88 (23.66)		115.57* (26.07)					
B05,I, 5, 7 2852.000				88.53 (26.07)		88.53* (26.07)				
B03,I, 6, 8 2472.000					64.45 (26.07)		64.45* (26.07)			
B01,I, 7, 8 171.000						4.46 (26.07)		4.46* (26.07)		
C13,G, 2, 4 9067.000	181.78 (20.05)		238.38* (26.07)							181.78 (20.05)
C11,G, 2, 4 4381.998	87.86 (20.05)		114.24* (26.07)							87.86 (20.05)
C09,G, 2, 4 1785.000	35.79 (20.05)		46.53* (26.07)							35.79 (20.05)
C07,G, 2, 4 6043.998	101.13 (20.05)		131.50* (26.07)							101.13 (20.05)
C05,I, 3, 5 951.000		20.98 (22.05)		24.78* (26.07)						
C03,I, 5, 7 296.000				7.00 (23.66)		7.72* (26.07)				
D13,G, 2, 4 10448.000			137.82 (13.19)		150.99* (14.45)					
D11,G, 2, 4 7487.000			98.75 (13.19)		108.19* (14.45)					
D09,G, 2, 4			180.74		198.01*					

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13703.000			(13.18)		(14.45)					
D07,I, 6, 7 13873.000						200.48 (14.45)		200.48* (14.45)		
D05,I, 5, 7 7845.152						110.47 (14.45)		110.47* (14.45)		
D05,I, 5, 8 7743.844							111.90 (14.45)		111.90* (14.45)	
D03,I, 5, 8 27027.895							356.50 (13.19)		390.55* (14.45)	
D01,I, 7, 9 3887.000								56.31 (14.45)		56.31* (14.45)
E13,C, 2, 4 7737.895		182.65* (21.02)						137.66 (17.79)		182.65* (21.02)
E11,C, 2, 4 5605.895		117.84* (21.02)						99.73 (17.79)		117.84* (21.02)
E09,C, 2, 4 7486.895		156.75* (21.02)						132.66 (17.79)		156.75* (21.02)
E07,I, 5, 7 7087.000			148.34 (21.02)		148.34* (21.02)					
E05,I, 5, 7 4427.895			93.29 (21.02)		93.29* (21.02)					
E03,I, 5, 8 4819.895				85.75 (17.79)		101.32* (21.02)				
E01,I, 7, 9 7031.895					147.81 (21.02)		147.81* (21.02)			
013,C, 1, 2 11409.029							202.97 (17.79)	217.88* (19.08)		
013,C, 2, 3 197.850	3.78* (19.08)							3.52 (17.79)	3.78* (19.08)	
011,C, 1, 2 8408.000							148.50 (17.79)	180.44* (19.08)		
009,C, 1, 2 6447.375							114.70 (17.79)	123.02* (19.08)		
009,I, 4, 5 4738.821		99.61 (21.02)	99.61* (21.02)							99.61 (21.02)
007,I, 4, 5 10585.000		222.50 (21.02)	222.50* (21.02)							222.50 (21.02)
005,I, 5, 7 6886.895				139.93 (21.02)	139.93* (21.02)					
003,I, 7, 8					152.00	152.00*				

7230.895					(21.02)	(21.02)				
001,I, 7, 8 10546.895					221.70 (21.02)	221.70* (21.02)				
F13,C, 1, 3 20057.895	315.31* (15.72)						285.83 (14.30)		338.38* (16.87)	
F11,C, 1, 3 25410.992	399.48* (15.72)						383.38 (14.30)		428.68* (16.87)	
F09,C, 1, 3 33428.000	525.50* (15.72)						478.03 (14.30)		563.95* (16.87)	
F07,C, 2, 4 51.466		0.87* (16.87)						0.74 (14.30)		0.87* (16.87)
F07,C, 3, 5 21657.531	340.46 (15.72)		402.40* (16.58)						385.36 (16.87)	
F05,N, 5, 7 9460.000			175.77 (16.58)		175.77* (16.58)					
F03,N, 5, 8 19921.895				370.15 (16.58)		370.15* (16.58)				
F01,N, 7, 9 17707.992					329.01 (16.58)		329.01* (16.58)			
G13,C, 1, 3 10585.000	166.40* (15.72)						151.37 (14.30)		178.57* (16.87)	
G11,C, 1, 3 12227.895	192.22* (15.72)						174.88 (14.30)		206.29* (16.87)	
G09,C, 1, 3 22864.895	361.01* (15.72)						328.40 (14.30)		387.42* (16.87)	
G07,C, 1, 3 19870.992	313.84* (15.72)						285.56 (14.30)		336.91* (16.87)	
G05,N, 5, 7 19468.992			361.73 (16.58)		361.73* (16.58)					
G03,N, 5, 8 73206.938				1360.17 (16.58)		1360.17* (16.58)				
G01,N, 7, 9 4010.000					74.51 (16.58)		74.51* (16.58)			

OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	75875.50	18829.26	62246.31	156731.19	71361.44	32555.37	205884.00	24947.41	21857.53	89341.55
M CUNITS	1423.76	394.48	1436.12	3201.37	1821.23	573.82	3004.11	430.62	386.36	1405.40
HARVEST CUTS										
ACRES	144844.75	22182.48	59859.05	9173.83	107544.44	180131.31	45849.20	50189.57	179816.56	24749.45

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M CUNITS	2277.63	466.81	2093.28	220.33	2071.84	3267.81	958.86	859.21	2946.42	494.42
TOTAL CUTS										
ACRES	220520.25	41011.71	171917.38	165904.81	178905.88	192687.63	251333.19	75116.94	201274.06	94091.00
M CUNITS	3701.38	861.29	3531.40	3421.69	3593.07	3841.63	3962.97	1299.83	3311.79	1899.82

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	21	22	23	24	25	26	27	28	29	30
					TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)					
A13,G, 2, 4		21.07*								
886.000		(23.78)								
A11,G, 2, 4		28.75*								
1209.000		(23.78)								
A09,G, 2, 5	51.40		60.75*							
2554.638	(20.12)		(23.78)							
A09,I, 4, 6		0.34		0.34*						
14.352		(23.78)		(23.78)						
A07,I, 4, 6		1.66		1.66*						
70.003		(23.78)		(23.78)						
A07,I, 5, 7			310.83							
13070.996			(23.78)							
A05,I, 5, 7			282.98							
11899.996			(23.78)							
A03,D, 6, 8				137.33						
5774.996				(23.78)						
A01,D, 7, 9										
2215.000										
P13,G, 2, 3	28.70*									
1330.000	(21.58)									
P11,I, 4, 5		43.14	43.14*							
1814.000		(23.78)	(23.78)							
P09,I, 4, 5		91.65	91.65*							
3854.000		(23.78)	(23.78)							
P07,I, 5, 6			468.73	468.73*						
19710.996			(23.78)	(23.78)						
P05,I, 5, 6			109.30	109.30*						

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4696.313		(23.78)	(23.78)	
P05,I, 6, 7			315.17	
13253.688			(23.78)	
P03,D, 6, 7			79.25	
3332.778			(23.78)	
P03,D, 7, 8				
5329.219				
P01,D, 7, 8				
3323.000				
B13,G, 2, 4		256.78*		
9848.998		(26.07)		
B11,G, 2, 4		294.15*		
11282.998		(26.07)		
B09,G, 2, 4		239.40*		
9182.998		(26.07)		
B07,I, 4, 5		104.88	115.57*	
4432.998		(23.66)	(26.07)	
B05,T, 5, 7		66.53		
2552.000		(26.07)		
B03,T, 6, 8			64.45	
2472.000			(26.07)	
B01,T, 7, 9				
171.000				
C13,G, 2, 4		236.38*		
9067.000		(26.07)		
C11,G, 2, 4		114.24*		
4381.998		(26.07)		
C09,G, 2, 4		46.53*		
1785.000		(26.07)		
C07,G, 2, 4		131.50*		
5043.998		(26.07)		
C05,I, 3, 5	22.50	24.79*		
851.000	(23.66)	(26.07)		
C03,I, 5, 7		7.00		
286.000		(23.66)		
D13,G, 2, 4			137.82	
10448.000			(13.19)	
D11,G, 2, 4			98.75	
7487.000			(13.19)	
D09,G, 2, 4			180.74	

13703.000			(13.19)	
D07,I, 5, 7				
13873.000				
D05,I, 5, 7				
7645.152				
D03,I, 6, 8				
7743.844				
D01,I, 7, 9				
27027.998				
E13,G, 2, 4				
3897.000				
E11,G, 2, 4				
7737.998				
E09,G, 2, 4				
5805.998				
E07,I, 5, 7	148.34	148.34*		
7067.000	(21.02)	(21.02)		
E05,I, 5, 7	93.29	93.29*		
4437.998	(21.02)	(21.02)		
E03,I, 6, 8	85.75		101.32*	
4819.998	(17.79)		(21.02)	
E01,I, 7, 9		147.61		
7031.998		(21.02)		
G13,G, 1, 2				
11408.038				
G13,G, 2, 3				
197.960				
G11,G, 1, 2				
8408.000				
G09,G, 1, 2				
6447.375				
G09,I, 4, 5	99.81*			
4738.621	(21.02)			
G07,I, 4, 5	222.50*			
10585.000	(21.02)			
G05,I, 5, 7	139.83	139.83*		
6656.998	(21.02)	(21.02)		
G03,I, 7, 8		152.00	152.00*	

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M CUNITS	2277.63	466.81	2093.28	220.33	2071.84	3257.81	958.86	889.21	2946.42	494.42
TOTAL CUTS										
ACRES	220520.25	41011.71	171917.38	165904.81	178905.88	192687.63	251333.19	75116.94	201274.06	94091.00
M CUNITS	3701.38	861.29	3531.40	3421.69	3593.07	3841.63	3962.97	1299.83	3311.79	1899.82

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	21	22	23	24	25	26	27	28	29	30
				TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)						
A13,G, 2, 4		21.07*								
886.000		(23.78)								
A11,G, 2, 4		28.75*								
1209.000		(23.78)								
A09,G, 2, 5	51.40		60.75*							
2554.638	(20.12)		(23.78)							
A09,I, 4, 6		0.34		0.34*						
14.362		(23.78)		(23.78)						
A07,I, 4, 6		1.66		1.66*						
70.003		(23.78)		(23.78)						
A07,I, 5, 7			310.83							
13070.996			(23.78)							
A05,I, 5, 7			282.98							
11899.996			(23.78)							
A03,D, 6, 8				137.33						
5774.996				(23.78)						
A01,D, 7, 9										
2215.000										
P13,G, 2, 3	28.70*									
1330.000	(21.58)									
P11,I, 4, 5		43.14	43.14*							
1814.000		(23.78)	(23.78)							
P09,I, 4, 5		91.65	91.65*							
3854.000		(23.78)	(23.78)							
P07,I, 5, 6			468.73	468.73*						
19710.996			(23.78)	(23.78)						
P05,I, 5, 6			109.30	109.30*						

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4595.313			(23.78)	(23.78)
P05,I, 6, 7 13283.868				315.17 (23.78)
P03,D, 6, 7 3332.778				79.25 (23.78)
P03,D, 7, 8 5329.218				
P01,D, 7, 8 3323.000				
B13,G, 2, 4 9848.996		256.78* (26.07)		
B11,G, 2, 4 11282.996		294.15* (26.07)		
B09,G, 2, 4 9182.996		239.40* (26.07)		
B07,I, 4, 8 4432.996		104.88 (23.88)		118.57* (26.07)
B05,T, 5, 7 2582.000			88.53 (26.07)	
B03,T, 5, 8 2472.000				84.48 (26.07)
B01,T, 7, 9 171.000				
C13,G, 2, 4 9067.000		236.38* (26.07)		
C11,G, 2, 4 4381.996		114.24* (26.07)		
C09,G, 2, 4 1788.000		46.53* (26.07)		
C07,G, 2, 4 5043.996		131.50* (26.07)		
C05,I, 3, 5 951.000	22.50 (23.66)		24.79* (26.07)	
C03,I, 5, 7 286.000			7.00 (23.66)	
D13,G, 2, 4 10448.000				137.82 (13.19)
D11,G, 2, 4 7487.000				98.75 (13.19)
D09,G, 2, 4				180.74

13703.000				(13.19)
D07,I, 5, 7 13873.000				
D05,I, 5, 7 7645.152				
D05,I, 6, 8 7743.844				
D03,I, 6, 8 27027.996				
D01,I, 7, 9 3897.000				
E13,G, 2, 4 7737.996				
E11,G, 2, 4 5805.996				
E09,G, 2, 4 7486.996				
EQ7,I, 5, 7 7057.000	148.34 (21.02)		148.34* (21.02)	
E05,I, 5, 7 4437.996	83.29 (21.02)		83.29* (21.02)	
E03,I, 6, 8 4819.996		85.75 (17.79)		101.32* (21.02)
E01,I, 7, 9 703).996			147.81 (21.02)	
013,G, 1, 2 11408.039				
013,G, 2, 3 187.980				
011,G, 1, 2 8408.000				
009,G, 1, 2 8447.375				
009,I, 4, 5 4738.621	99.81* (21.02)			
007,I, 4, 5 10585.000	222.80* (21.02)			
005,I, 5, 7 6656.996		139.83 (21.02)	139.93* (21.02)	
003,I, 7, 8			152.00	152.00*

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7230.996			(21.02)	(21.02)						
001,I, 7, 8			221.70	221.70*						
10546.996			(21.02)	(21.02)						
F13,C, 1, 3										
20087.996										
F11,C, 1, 3										
26410.992										
F08,C, 1, 3										
33429.000										
F07,C, 2, 4										
51.486										
F07,D, 3, 5	402.40*									
21657.531	(18.58)									
F05,N, 5, 7	175.77		175.77*							
9480.000	(18.58)		(18.58)							
F03,N, 6, 8		370.15		370.15*						
19921.996		(18.58)		(18.58)						
F01,N, 7, 9			329.01							
17707.992			(18.58)							
G13,C, 1, 3										
10585.000										
G11,C, 1, 3										
12227.996										
G09,C, 1, 3										
22984.996										
G07,C, 1, 3										
19970.992										
G05,N, 5, 7	361.73		361.73*							
19466.992	(18.58)		(18.58)							
G03,N, 6, 8		1360.17		1360.17*						
73205.938		(18.58)		(18.58)						
G01,N, 7, 9			74.51							
4010.000			(18.58)							
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	43829.83	114790.25	98654.13	56472.46	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	853.03	2197.67	2170.40	1013.52	0.0	0.0	0.0	0.0	0.0	0.0
HARVEST CUTS										
ACRES	38311.18	52687.87	56254.82	144550.56	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	753.20	1363.78	1139.38	2800.83	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CUTS										
ACRES	82240.75	167478.13	154908.69	201023.00	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1606.23	3560.45	3309.78	3814.48	0.0	0.0	0.0	0.0	0.0	0.0

+ = OVERSTORY REMOVAL CUT; * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 8
TOTAL OBJECTIVE VALUE = 25333.43 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,G, 2, 4	886.00	48.84	53.84
A11,G, 2, 4	1208.00	57.97	47.85
A09,G, 2, 5	2554.64	111.82	43.77
A09,I, 4, 6	14.36	0.69	47.85
A07,I, 4, 6	70.00	2.97	42.47
A07,I, 5, 7	13071.00	592.38	45.32
A05,I, 5, 7	11800.00	468.03	38.33
A03,D, 8, 8	5775.00	223.72	38.74
A01,D, 7, 9	2215.00	77.18	34.85
P13,G, 2, 3	1330.00	68.60	51.58
P11,I, 4, 5	1814.00	93.57	51.58
P09,I, 4, 5	3864.00	180.14	46.74
P07,I, 5, 6	19711.00	867.68	44.02
P05,I, 5, 6	4586.31	173.85	37.74
P05,I, 5, 7	13263.89	544.06	41.05
P03,D, 6, 7	3332.75	123.38	37.02
P03,D, 7, 8	5329.22	216.89	40.68
P01,D, 7, 8	3323.00	109.43	32.93
B13,G, 2, 4	9848.00	408.27	41.45
B11,G, 2, 4	11283.00	457.30	40.52
B09,G, 2, 4	9183.00	321.98	34.33
B07,I, 4, 5	4433.00	169.92	38.33
B05,T, 5, 7	2852.00	83.10	38.48
B03,T, 6, 8	2472.00	84.00	33.98
B01,T, 7, 8	171.00	5.24	30.62
C13,G, 2, 4	9067.00	268.75	29.64
C11,G, 2, 4	4382.00	124.23	28.35
C09,G, 2, 4	1785.00	48.48	27.15
C07,G, 2, 4	5044.00	130.04	25.79
C05,I, 3, 5	951.00	23.57	24.78
C03,I, 5, 7	295.00	7.33	24.78
D13,G, 2, 4	10449.00	332.70	31.84
D11,G, 2, 4	7487.00	217.72	29.08
D09,G, 2, 4	13703.00	380.84	28.59
D07,I, 5, 7	13873.00	380.87	27.44
D05,I, 5, 7	7845.15	179.13	22.83
D05,I, 6, 6	7743.64	198.17	25.58
D03,I, 6, 8	27026.00	582.53	20.85
D01,I, 7, 9	3887.00	68.78	17.85
E13,G, 2, 4	7738.00	356.95	46.13
E11,G, 2, 4	5606.00	242.57	43.27
E09,G, 2, 4	7457.00	295.74	39.66
E07,I, 5, 7	7057.00	293.43	41.58
E05,I, 6, 7	4438.00	166.07	37.42
E03,I, 6, 8	4820.00	187.84	34.76
E01,I, 7, 8	7032.00	221.02	31.43
O13,G, 1, 2	11408.04	687.82	60.27
O13,G, 2, 3	187.38	9.01	48.52
O11,G, 1, 2	8409.00	478.84	56.92
O08,G, 1, 2	6447.38	338.49	52.50
O09,I, 4, 5	4735.62	201.53	42.53
O07,I, 5, 5	10585.00	409.75	38.71
O05,I, 5, 7	6557.00	249.10	37.62
O03,I, 7, 8	7231.00	282.70	39.33
O01,I, 7, 8	10847.00	314.93	29.88
P13,G, 1, 3	20058.00	897.80	44.76
P11,G, 1, 3	25410.99	1180.34	48.45
P09,G, 1, 3	33429.00	1544.08	48.19
P07,C, 2, 4	51.47	1.78	34.61
P07,G, 3, 5	21857.53	806.23	37.18
P05,N, 5, 7	9480.00	380.78	40.28
P03,N, 6, 8	19922.00	788.18	39.61
P01,N, 7, 9	17707.98	607.58	34.31
C13,G, 1, 3	10585.00	401.89	37.94
C11,G, 1, 3	12226.00	447.30	36.58
C09,G, 1, 3	22965.00	788.41	34.81
C07,C, 1, 3	18970.88	683.41	34.22
C05,N, 5, 7	18488.89	735.73	37.78
C03,N, 6, 8	73205.94	2826.48	38.61
C01,N, 7, 9	4010.00	137.58	34.31

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 25333.43 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2930.64 M CUNITS/DECADE

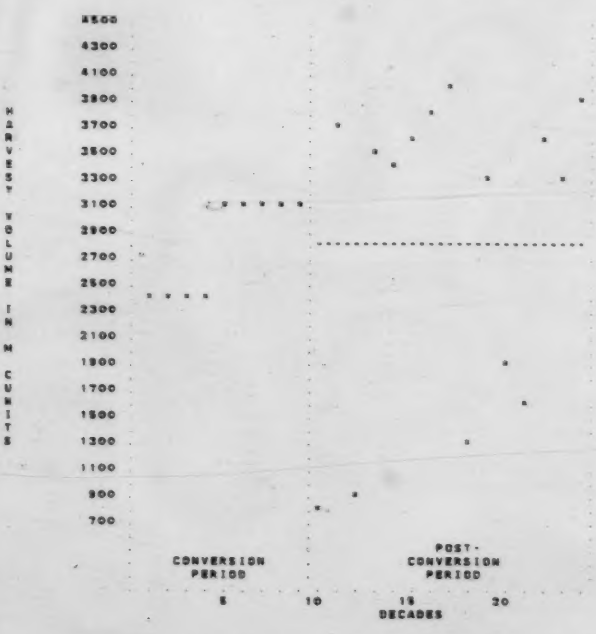
AVERAGE OF POST-CONVERSION PERIODIC HARVESTS= 2844.22 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	170912.	2422.58	2422.58	0	0.0	0.0	170912.	2422.58	2422.58
2	0.	0.0	0.0	108282.	1870.19	4292.77	28285.	552.38	552.38	136567.	2422.58	4845.16
3	0.	0.0	0.0	22808.	382.42	4885.20	148178.	2030.16	2582.55	168783.	2422.58	7287.75
4	0.	0.0	0.0	28508.	514.81	5199.70	108179.	1908.07	4490.63	130888.	2422.58	9890.33
5	0.	0.0	0.0	120728.	2177.18	7376.88	46155.	951.48	5442.10	166880.	3128.64	12818.98
6	0.	0.0	0.0	157553.	2499.73	9876.59	28825.	828.81	6271.01	186378.	3128.64	15947.61
7	0.	0.0	0.0	81483.	910.15	10786.74	1130004.	2218.49	8289.50	1744884.	3128.64	19076.25
8	0.	0.0	0.0	0.	0.0	10786.74	167397.	3128.64	11418.14	167397.	3128.64	22204.89
9	0.	0.0	0.0	170912.	2483.15	13279.90	35033.	835.48	12053.61	205845.	3128.64	25333.53
10	0.	0.0	0.0	21050.	374.31	13654.21	26285.	467.26	12520.87	47218.	841.57	26175.09
11	0.	0.0	0.0	75678.	1423.75	15077.96	144845.	2277.83	14798.50	220520.	3701.38	29876.47
12	0.	0.0	0.0	18828.	394.48	15472.44	22182.	486.81	15285.30	41010.	881.29	30757.76
13	0.	0.0	0.0	82248.	1438.12	16910.56	89669.	2093.28	17388.58	171917.	3531.40	34289.15
14	0.	0.0	0.0	158731.	3201.37	20111.92	9174.	220.33	17578.90	165905.	3421.69	37690.84
15	0.	0.0	0.0	71381.	1521.23	21633.14	107844.	2071.84	19650.74	179906.	3593.07	41283.91
16	0.	0.0	0.0	32856.	573.82	22206.96	180131.	3267.81	22918.55	192888.	3841.63	45125.54
17	0.	0.0	0.0	205884.	3004.11	25211.07	45649.	958.86	23877.41	251333.	3962.97	49088.50
18	0.	0.0	0.0	24947.	630.82	25841.89	50170.	869.21	24746.62	75117.	1298.83	50386.33
19	0.	0.0	0.0	21858.	385.38	26007.05	178817.	2846.42	27593.04	201274.	3311.78	53700.11
20	0.	0.0	0.0	89342.	1408.40	27412.45	24749.	494.42	28187.46	94091.	1899.82	55599.93
21	0.	0.0	0.0	43830.	873.03	28285.47	38311.	753.20	28940.85	82241.	1806.22	57206.15
22	0.	0.0	0.0	114780.	2187.87	30463.14	52888.	1366.78	30308.43	167478.	3585.45	60772.80
23	0.	0.0	0.0	88884.	2170.40	32633.53	56256.	1138.38	31446.81	154909.	3309.78	64082.38
24	0	0.0	0.0	88472.	1013.52	33647.05	144551.	2900.93	34349.74	201023.	3914.45	67996.81

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
--o--- = PERIOD AVERAGE

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1.1 PROBLEM TITLE

CANFOR TIMBER RAW ANALYSIS, RUN N388, COMBINED IM.,FIR REG WS.
ALT. C. CUT, REGEN=5,2 YR LAG,4% CULL,NORMAL STOCKING, NOV 28,1982

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE-LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2400.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 9
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 16

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL LOWER AND UPPER

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.100
POST-CONVERSION PERIOD		
10	0.990	0.990
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAG*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	-1

NOTE* IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED*

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	8	24		

NOTE* IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5. TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	1	PERCENT ACCESSIBLE IN PERIODS 2	3	4	5
A13		13	L	0.888	1.00				
A11		11	L	1.209	1.00				
A09		9	L	2.569	1.00				
A07		7	L	13.141	1.00				
A05		5	L	11.900	1.00				
A03		3	L	5.775	1.00				
A01		1	L	2.219	1.00				
P13		13	L	1.330	1.00				
P11		11	L	1.814	1.00				
P09		9	L	3.854	1.00				
P07		7	L	19.711	1.00				
P05		5	L	17.850	1.00				
P03		3	L	8.662	1.00				
P01		1	L	3.323	1.00				
B13		13	L	0.849	1.00				
B11		11	L	11.283	1.00				
B09		9	L	8.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.982	1.00				
B03		2	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	8.087	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.785	1.00				
C07		7	L	8.044	1.00				
C05		5	L	0.851	1.00				
C03		3	L	0.298	1.00				
D13		13	L	10.449	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	12.673	1.00				
D05		5	L	15.388	1.00				
D03		3	L	27.026	1.00				
D01		1	L	2.887	1.00				
E13		13	L	7.738	1.00				
E11		11	L	5.806	1.00				
E09		9	L	7.457	1.00				
E07		7	L	7.087	1.00				
E05		5	L	4.436	1.00				
E03		3	L	4.820	1.00				
E01		1	L	7.032	1.00				
G13		13	L	11.607	1.00				
G11		11	L	8.409	1.00				
G09		9	L	11.188	1.00				
G07		7	L	10.585	1.00				
G05		5	L	8.657	1.00				
G03		3	L	7.231	1.00				
G01		1	L	10.547	1.00				
F13		13	L	20.066	1.00				
F11		11	L	28.411	1.00				
F09		9	L	33.429	1.00				
F07		7	L	31.709	1.00				
F05		5	L	9.480	1.00				
F03		3	L	18.833	1.00				
F01		1	L	17.708	1.00				

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C13	13	L	10.685	1.00
C11	11	L	12.228	1.00
C09	9	L	22.965	1.00
C07	7	L	19.971	1.00
C05	5	L	18.489	1.00
C03	3	L	72.306	1.00
C01	1	L	4.819	1.00

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 888.931 THOUSAND ACRES

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2 MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT REC	CODES NON-GEN	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	0		1	0	6	1	1	2	3	5	3	5
A13	1		9	0	6	1	3	4	5	6	3	5
A11	0		1	0	6	1	1	2	3	5	3	5
A11	1		9	0	6	1	3	6	5	8	3	5
A09	0		1	0	6	1	1	2	3	5	3	5
A09	1		9	0	6	1	3	8	5	10	3	5
A07	0		1	0	6	1	1	2	3	5	3	5
A07	1		9	0	6	1	3	10	5	12	3	5
A05	1		9	0	6	1	3	12	5	14	3	5
A03	1		9	0	6	1	5	14	7	16	3	5
A02	0		21	0	6	1	5	14	7	16	3	5
A01	1		9	0	6	1	7	16	9	18	3	5
A01	0		22	0	6	1	7	16	9	18	3	5
P13	0		23	0	3	1	1	3	2	3	2	4
P13	1		24	0	5	1	3	5	4	5	2	4
P11	0		23	0	3	1	1	3	2	3	2	4
P11	1		24	0	5	1	3	7	4	5	2	4
P09	0		23	0	3	1	1	3	2	3	2	4
P09	1		24	0	5	1	3	9	4	10	2	4
P07	0		23	0	3	1	1	3	2	3	2	4
P07	1		24	0	6	1	3	11	4	12	2	4
P05	1		24	0	6	1	3	13	4	14	2	4
P03	1		24	0	6	1	5	15	6	16	2	4
P03	0		25	0	6	1	5	15	6	16	2	4
P01	1		24	0	6	1	7	17	8	18	2	4
P01	0		25	0	6	1	7	17	8	18	2	4
B13	0		2	0	4	1	1	3	3	5	3	5
B13	1		10	0	6	1	3	4	5	6	3	5
B11	0		2	0	4	1	1	3	3	5	3	5
B11	1		10	0	6	1	3	6	5	8	3	5
B11	T		11	0	11	1	5	8	7	8	3	5
B09	0		2	0	4	1	1	3	3	5	3	5
B09	1		10	0	6	1	3	4	5	6	3	5
B09	T		11	0	11	1	5	8	7	10	3	5
B07	0		2	0	4	1	1	3	3	5	3	5
B07	1		10	0	6	1	3	4	5	6	3	5
B07	T		11	0	11	1	5	10	7	12	3	5
B05	1		10	0	6	1	3	6	5	8	3	5
B05	T		11	0	11	1	5	12	7	14	3	5
B03	T		11	0	11	1	5	14	7	16	3	5
B01	T		11	0	11	1	7	16	9	18	3	5
C13	0		3	0	4	1	1	3	3	5	3	5
C13	1		12	0	6	1	3	4	5	6	3	5
C11	0		3	0	4	1	1	3	3	5	3	5
C11	1		12	0	6	1	3	6	5	8	3	5
C11	T		13	0	11	1	5	8	7	8	3	5
C09	0		3	0	4	1	1	3	3	5	3	5
C09	1		12	0	6	1	3	6	5	8	3	5
C09	T		13	0	11	1	5	8	7	10	3	5
C07	0		3	0	4	1	1	3	3	5	3	5
C07	1		12	0	6	1	3	4	5	6	3	5
C07	T		13	0	11	1	5	10	7	12	3	5
C05	1		12	0	6	1	3	4	5	6	3	5
C05	T		13	0	11	1	5	12	7	14	3	5
C03	1		12	0	6	1	5	14	7	16	3	5

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D13	C	4	0	4	1	1	2	3	5	3	5	
D13	I	14	0	8	1	3	4	5	6	3	5	
D11	C	4	0	4	1	1	2	3	5	3	5	
D11	I	14	0	8	1	3	5	5	8	3	5	
D09	C	4	0	4	1	1	2	3	5	3	5	
D09	I	14	0	8	1	3	5	5	10	3	5	
D07	C	4	0	4	1	1	2	3	5	3	5	
D07	I	14	0	8	1	3	10	5	12	3	5	
D05	I	14	0	8	1	3	12	5	14	3	5	
D03	I	4	0	8	1	5	14	7	16	3	5	
D01	I	14	0	8	1	7	16	9	18	3	5	
E13	C	5	0	4	1	1	2	3	5	3	5	
E13	I	15	0	8	1	3	4	5	6	3	5	
E11	C	5	0	4	1	1	2	3	5	3	5	
E11	I	15	0	8	1	3	6	5	8	3	5	
E09	C	5	0	4	1	1	2	3	5	3	5	
E09	I	15	0	8	1	3	8	5	10	3	5	
E07	C	5	0	4	1	1	2	3	5	3	5	
E07	I	15	0	8	1	3	10	5	12	3	5	
E05	I	15	0	8	1	3	12	5	14	3	5	
E03	I	5	0	8	1	5	14	7	16	3	5	
E01	I	15	0	8	1	7	16	9	18	3	5	
D13	C	27	0	3	1	1	2	2	3	2	4	
D13	I	28	0	8	1	3	5	4	8	2	4	
D11	C	27	0	3	1	1	2	2	3	2	4	
D11	I	28	0	8	1	3	7	4	8	2	4	
D09	C	27	0	3	1	1	2	2	3	2	4	
D09	I	28	0	8	1	3	9	4	10	2	4	
D07	C	27	0	3	1	1	2	2	3	2	4	
D07	I	28	0	8	1	3	11	4	12	2	4	
D05	I	28	0	8	1	3	13	4	14	2	4	
D03	I	28	0	8	1	5	15	6	16	2	4	
D01	I	28	0	8	1	7	17	8	18	2	4	
F13	C	7	0	4	1	1	2	3	5	3	5	
F13	I	19	0	8	1	3	4	5	8	3	5	
F11	C	7	0	4	1	1	2	3	5	3	5	
F11	I	19	0	8	1	3	6	5	8	3	5	
F11	T	20	0	-1	1	5	6	7	8	3	5	
F09	C	7	0	4	1	1	2	3	5	3	5	
F09	I	19	0	8	1	3	8	5	8	3	5	
F09	T	20	0	-1	1	5	8	7	10	3	5	
F07	C	7	0	4	1	1	2	3	5	3	5	
F07	C	18	0	4	1	1	2	3	5	3	5	
F07	I	19	0	8	1	3	4	5	8	3	5	
F07	O	29	0	8	1	3	4	5	8	3	5	
F07	T	20	0	-1	1	5	10	7	12	3	5	
F07	N	30	0	-1	1	5	10	7	12	3	5	
F05	I	19	0	8	1	3	4	5	8	3	5	
F05	O	31	0	8	1	3	4	5	8	3	5	
F05	T	20	0	-1	1	5	12	7	14	3	5	
F05	N	32	0	-1	1	5	12	7	14	3	5	
F03	T	20	0	-1	1	5	14	7	16	3	5	
F03	N	8	0	-1	1	5	14	7	16	3	5	
F01	T	20	0	-1	1	7	16	9	18	3	5	
F01	N	8	0	-1	1	7	16	9	18	3	5	
G13	C	6	0	4	1	1	2	3	5	3	5	
G13	I	16	0	8	1	3	4	5	8	3	5	
G11	C	6	0	4	1	1	2	3	5	3	5	
G11	I	16	0	8	1	3	4	5	8	3	5	
G11	T	17	0	-1	1	5	6	7	8	3	5	

G09	C	6	0	4	1	1	2	3	5	3	5	
G09	I	16	0	8	1	3	4	5	8	3	5	
G09	T	17	0	-1	1	5	8	7	10	3	5	
G07	C	6	0	4	1	1	2	3	5	3	5	
G07	C	33	0	4	1	1	2	3	5	3	5	
G07	I	16	0	8	1	3	4	5	8	3	5	
G07	O	34	0	8	1	3	4	5	8	3	5	
G07	T	17	0	-1	1	5	10	7	12	3	5	
G07	N	35	0	-1	1	5	10	7	12	3	5	
G05	I	16	0	8	1	3	4	5	8	3	5	
G05	O	36	0	8	1	3	4	5	8	3	5	
G05	T	17	0	-1	1	5	12	7	14	3	5	
G05	N	37	0	-1	1	5	12	7	14	3	5	
G03	T	17	0	-1	1	5	14	7	16	3	5	
G03	N	8	0	-1	1	5	14	7	16	3	5	
G01	T	17	0	-1	1	7	16	9	18	3	5	
G01	N	6	0	-1	1	7	16	9	18	3	5	

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7. VOLUME DATA

VOL CLASS 1 (PINE 6/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	18.23	20.13
8	16.11	0.0	16.11	0.0	0.0	0.0
9	18.03	0.0	18.03	0.0	21.58	23.78
10	19.78	0.0	19.78	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.38	0.0	28.38	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 2 (WHITE SPRUCE 6/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.28	0.0	8.28	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	20.05	20.05
8	15.58	0.0	15.58	0.0	0.0	0.0
9	17.18	0.0	17.18	0.0	23.66	26.07
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.38	0.0	20.38	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

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VOL CLASS 3 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.64	0.0	10.64	0.0	0.0	0.0
7	11.63	0.0	11.63	0.0	20.05	20.05
8	12.61	0.0	12.61	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	22.68	28.07
10	13.26	0.0	13.26	0.0	0.0	0.0
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.15	0.0	14.15	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.15	0.0	15.15	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 11

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.87	13.19
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.88	0.0	12.88	0.0	13.70	14.45
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

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VOL CLASS 5 (SW-PL 6/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.15	0.0	8.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	16.17	17.79
7	13.91	0.0	13.91	0.0	0.0	0.0
8	15.85	0.0	15.85	0.0	19.04	21.02
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 6 (HS 6/4)
CLASS NUMBER 6

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.99	0.0	8.99	0.0	14.30	14.30
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.08	0.0	9.08	0.0	15.72	16.87
9	9.75	0.0	9.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.75	0.0	10.75	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

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VOL CLASS 7 (SH 6/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	14.30	14.30
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.88	0.0	14.88	0.0	15.72	15.87
9	15.80	0.0	15.80	0.0	0.0	0.0
10	15.11	0.0	15.11	0.0	0.0	0.0
11	15.29	0.0	15.29	0.0	0.0	0.0
12	15.19	0.0	15.19	0.0	0.0	0.0
13	15.86	0.0	15.86	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

VOL CLASS 8 (MW - AW 6/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.84	0.0	7.84	0.0	0.0	0.0
6	11.19	0.0	11.19	0.0	13.58	0.0
7	14.74	0.0	14.74	0.0	0.0	0.0
8	17.47	0.0	17.47	0.0	18.56	0.0
9	18.57	0.0	18.57	0.0	0.0	0.0
10	21.14	0.0	21.14	0.0	0.0	0.0
11	22.24	0.0	22.24	0.0	0.0	0.0
12	22.91	0.0	22.91	0.0	0.0	0.0
13	23.17	0.0	23.17	0.0	0.0	0.0
14	23.06	0.0	23.06	0.0	0.0	0.0
15	22.55	0.0	22.55	0.0	0.0	0.0
16	21.69	0.0	21.69	0.0	0.0	0.0
17	20.48	0.0	20.48	0.0	0.0	0.0
18	18.92	0.0	18.92	0.0	0.0	0.0

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VOL CLASS 9 (PINE 6/4)
CLASS NUMBER 9

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	21.58	23.78
8	16.11	0.0	16.11	0.0	0.0	0.0
9	18.03	0.0	18.03	0.0	23.78	23.78
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 10 (WHITE SPRUCE 6/4)
CLASS NUMBER 10

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	6.26	0.0	6.26	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	22.06	23.66
8	15.58	0.0	15.58	0.0	0.0	0.0
9	17.19	0.0	17.19	0.0	26.07	26.07
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

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VOL CLASS 11 (WHITE SPRUCE 6/4)
CLASS NUMBER 11

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	6.26	0.0	6.26	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	25.07	0.0
8	15.58	0.0	15.58	0.0	0.0	0.0
9	17.19	0.0	17.19	0.0	25.07	0.0
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VOL CLASS 12 (BALSAM FIR 6/4,REGENERATES AS WS)
CLASS NUMBER 12

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.63	0.0	11.63	0.0	22.06	23.68
8	12.51	0.0	12.51	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	28.07	28.07
10	13.28	0.0	13.28	0.0	0.0	0.0
11	13.56	0.0	13.56	0.0	0.0	0.0
12	13.67	0.0	13.67	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.61	0.0	14.61	0.0	0.0	0.0
16	15.15	0.0	15.15	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

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VOL CLASS 13 (BALSAM FIR S/4,REGENERATES AS WS)
CLASS NUMBER 13

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.28	0.0	7.28	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.63	0.0	11.63	0.0	28.07	0.0
8	12.51	0.0	12.51	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	28.07	0.0
10	13.26	0.0	13.26	0.0	0.0	0.0
11	13.56	0.0	13.56	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.18	0.0	15.18	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

VOL CLASS 14 (BLACK SPRUCE - PINE S/4)
CLASS NUMBER 14

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 11

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.08	0.0	7.08	0.0	0.0	0.0
8	9.04	0.0	9.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	13.70	14.45
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.85	0.0	12.85	0.0	14.45	14.45
12	13.75	0.0	13.75	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

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VOL CLASS 15 (SW-PL 6/4)
CLASS NUMBER 15

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.15	0.0	8.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	19.08	21.02
7	13.81	0.0	13.81	0.0	0.0	0.0
8	15.85	0.0	15.85	0.0	21.02	21.02
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 16 (HS 6/4)
CLASS NUMBER 16

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	6.99	0.0	6.99	0.0	15.72	16.87
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.06	0.0	9.06	0.0	16.58	16.58
9	9.75	0.0	9.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.75	0.0	10.75	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

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VOL CLASS 17 (MS 6/4)
CLASS NUMBER 17

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	6.88	0.0	6.88	0.0	16.58	0.0
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.08	0.0	9.08	0.0	16.58	0.0
9	9.75	0.0	9.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.78	0.0	10.78	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 18 (SM - AW II 6/4)
CLASS NUMBER 18

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	14.30	14.30
7	13.30	0.0	13.30	0.0	0.0	0.0
8	15.75	0.0	15.75	0.0	15.72	15.87
9	17.60	0.0	17.60	0.0	0.0	0.0
10	18.86	0.0	18.86	0.0	0.0	0.0
11	19.58	0.0	19.58	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.56	0.0	19.56	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

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VDL CLASS 19 (SH 6/4)
CLASS NUMBER 19

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	18.72	18.87
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.69	0.0	14.69	0.0	18.58	18.58
9	15.60	0.0	15.60	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

VDL CLASS 20 (SH 6/4)
CLASS NUMBER 20

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	18.58	0.0
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.69	0.0	14.69	0.0	18.58	0.0
9	15.60	0.0	15.60	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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VOL CLASS 21 (SPACED PINE 6/4)
CLASS NUMBER 21

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.86	0.0	8.86	0.0	0.0	0.0
6	12.31	0.0	12.31	0.0	0.0	0.0
7	15.19	0.0	15.19	0.0	21.58	23.78
8	17.85	0.0	17.85	0.0	0.0	0.0
9	19.47	0.0	19.47	0.0	23.78	23.78
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.16	0.0	24.16	0.0	0.0	0.0
13	25.48	0.0	25.48	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.79	0.0	27.79	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.76	0.0	30.76	0.0	0.0	0.0

VOL CLASS 22 (SPACED PINE 6/4)
CLASS NUMBER 22

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	9.71	0.0	9.71	0.0	0.0	0.0
6	12.87	0.0	12.87	0.0	0.0	0.0
7	15.38	0.0	15.38	0.0	21.58	23.78
8	17.85	0.0	17.85	0.0	0.0	0.0
9	19.47	0.0	19.47	0.0	23.78	23.78
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.16	0.0	24.16	0.0	0.0	0.0
13	25.48	0.0	25.48	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.79	0.0	27.79	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.76	0.0	30.76	0.0	0.0	0.0

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VOL CLASS 23 (PINE 6/4)
CLASS NUMBER 23

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	16.39	20.12
9	16.03	0.0	16.03	0.0	20.12	21.56
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 24 (PINE 6/4)
CLASS NUMBER 24

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	21.56	23.76
9	16.03	0.0	16.03	0.0	23.76	23.76
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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YDL CLASS 25 (SPACED PINE 6/4)
CLASS NUMBER 25

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.85	0.0	5.85	0.0	0.0	0.0
6	12.31	0.0	12.31	0.0	0.0	0.0
7	16.19	0.0	16.19	0.0	0.0	0.0
8	17.85	0.0	17.85	0.0	21.58	23.76
9	19.47	0.0	19.47	0.0	23.76	23.76
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.19	0.0	24.19	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.78	0.0	27.78	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.78	0.0	30.78	0.0	0.0	0.0

YDL CLASS 25 (SPACED PINE 6/4)
CLASS NUMBER 25

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.71	0.0	5.71	0.0	0.0	0.0
6	12.67	0.0	12.67	0.0	0.0	0.0
7	16.38	0.0	16.38	0.0	0.0	0.0
8	17.85	0.0	17.85	0.0	21.58	23.76
9	19.47	0.0	19.47	0.0	23.76	23.76
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.19	0.0	24.19	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.78	0.0	27.78	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.78	0.0	30.78	0.0	0.0	0.0

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VDL CLASS 27 (SW-PL 6/4)
CLASS NUMBER 27

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	16.17	17.79
8	15.95	0.0	15.95	0.0	17.79	18.08
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VDL CLASS 28 (SW-PL 6/4)
CLASS NUMBER 28

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.91	0.0	13.91	0.0	19.08	21.02
8	15.95	0.0	15.95	0.0	21.02	21.02
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

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VOL CLASS 29 (SH-AW II 6/4)
CLASS NUMBER 29

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	15.72	15.87
7	13.30	0.0	13.30	0.0	0.0	0.0
8	15.75	0.0	15.75	0.0	15.86	15.86
9	17.60	0.0	17.60	0.0	0.0	0.0
10	16.85	0.0	16.85	0.0	0.0	0.0
11	19.55	0.0	19.55	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.55	0.0	19.55	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

VOL CLASS 30 (SH-AW II 6/4)
CLASS NUMBER 30

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	15.72	0.0
7	13.30	0.0	13.30	0.0	0.0	0.0
8	15.75	0.0	15.75	0.0	15.86	0.0
9	17.60	0.0	17.60	0.0	0.0	0.0
10	16.85	0.0	16.85	0.0	0.0	0.0
11	19.55	0.0	19.55	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.55	0.0	19.55	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

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VOL CLASS 31 (SH-AW I 6/4)
CLASS NUMBER 31

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.87	0.0	11.87	0.0	18.72	18.87
7	14.83	0.0	14.83	0.0	0.0	0.0
8	17.28	0.0	17.28	0.0	18.56	18.56
9	18.14	0.0	18.14	0.0	0.0	0.0
10	20.40	0.0	20.40	0.0	0.0	0.0
11	21.11	0.0	21.11	0.0	0.0	0.0
12	21.32	0.0	21.32	0.0	0.0	0.0
13	21.08	0.0	21.08	0.0	0.0	0.0
14	20.42	0.0	20.42	0.0	0.0	0.0
15	18.37	0.0	18.37	0.0	0.0	0.0
16	17.86	0.0	17.86	0.0	0.0	0.0
17	16.20	0.0	16.20	0.0	0.0	0.0
18	14.13	0.0	14.13	0.0	0.0	0.0

VOL CLASS 32 (SH-AW I 6/4)
CLASS NUMBER 32

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.87	0.0	11.87	0.0	18.56	0.0
7	14.83	0.0	14.83	0.0	0.0	0.0
8	17.28	0.0	17.28	0.0	18.56	0.0
9	18.14	0.0	18.14	0.0	0.0	0.0
10	20.40	0.0	20.40	0.0	0.0	0.0
11	21.11	0.0	21.11	0.0	0.0	0.0
12	21.32	0.0	21.32	0.0	0.0	0.0
13	21.08	0.0	21.08	0.0	0.0	0.0
14	20.42	0.0	20.42	0.0	0.0	0.0
15	18.37	0.0	18.37	0.0	0.0	0.0
16	17.86	0.0	17.86	0.0	0.0	0.0
17	16.20	0.0	16.20	0.0	0.0	0.0
18	14.13	0.0	14.13	0.0	0.0	0.0

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VDL CLASS 33 (HS-AW II 8/4)
CLASS NUMBER 33

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.99	0.0	8.99	0.0	14.30	14.30
7	8.21	0.0	8.21	0.0	0.0	0.0
8	10.32	0.0	10.32	0.0	15.72	15.87
9	11.71	0.0	11.71	0.0	0.0	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.61	0.0	12.61	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.55	0.0	11.55	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

VDL CLASS 34 (HS-AW II 8/4)
CLASS NUMBER 34

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.99	0.0	8.99	0.0	15.72	15.87
7	8.21	0.0	8.21	0.0	0.0	0.0
8	10.32	0.0	10.32	0.0	14.58	14.58
9	11.71	0.0	11.71	0.0	0.0	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.61	0.0	12.61	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.55	0.0	11.55	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

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VOL CLASS 35 (NS-AW II 8/4)
CLASS NUMBER 35

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	6.98	0.0	6.98	0.0	18.58	0.0
7	8.21	0.0	8.21	0.0	0.0	0.0
8	10.32	0.0	10.32	0.0	18.58	0.0
9	11.71	0.0	11.71	0.0	0.0	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.61	0.0	12.61	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.55	0.0	11.55	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

VOL CLASS 35 (NS-AW I 8/4)
CLASS NUMBER 35

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	11.73	0.0	11.73	0.0	13.72	14.47
7	14.84	0.0	14.84	0.0	0.0	0.0
8	17.07	0.0	17.07	0.0	18.58	18.58
9	18.44	0.0	18.44	0.0	0.0	0.0
10	19.17	0.0	19.17	0.0	0.0	0.0
11	19.35	0.0	19.35	0.0	0.0	0.0
12	19.05	0.0	19.05	0.0	0.0	0.0
13	18.30	0.0	18.30	0.0	0.0	0.0
14	17.12	0.0	17.12	0.0	0.0	0.0
15	15.54	0.0	15.54	0.0	0.0	0.0
16	13.59	0.0	13.59	0.0	0.0	0.0
17	11.88	0.0	11.88	0.0	0.0	0.0
18	11.88	0.0	11.88	0.0	0.0	0.0

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VDL CLASS 37 (MS-AW I 8/4)
CLASS NUMBER 37

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.81	0.0	4.81	0.0	0.0	0.0
6	11.73	0.0	11.73	0.0	18.58	0.0
7	14.84	0.0	14.84	0.0	0.0	0.0
8	17.07	0.0	17.07	0.0	18.58	0.0
9	18.44	0.0	18.44	0.0	0.0	0.0
10	18.17	0.0	18.17	0.0	0.0	0.0
11	18.38	0.0	18.38	0.0	0.0	0.0
12	18.05	0.0	18.05	0.0	0.0	0.0
13	18.30	0.0	18.30	0.0	0.0	0.0
14	17.12	0.0	17.12	0.0	0.0	0.0
15	15.54	0.0	15.54	0.0	0.0	0.0
16	13.59	0.0	13.59	0.0	0.0	0.0
17	11.88	0.0	11.88	0.0	0.0	0.0
18	11.88	0.0	11.88	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
NORMAL PROGRAM END

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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVLO3

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N388, COMBINED IM ,FIR REG WS
ALT. C CUT, REGEN=S,2 YR LAG,4% CULL,NORMAL STOCKING, NOV. 29,1982

GENERATED BY TIMBRAM MATRIX ON PRINT OUT DATA AND GENERATE

****

4. OUTPUT CONTROL CARD

NUMBER OF PRINTED COPIES = 1
CASE OUTPUT=R

5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	1	2	3	4	5	6	7	8	9	10
A13,C, 2, 4 886.000		22.35 (25.23)		24.29* (27.41)						
A11,C, 2, 4 1309.000		27.47 (22.72)		30.59* (25.23)						
A09,C, 3, 5 2588.000		50.74 (19.78)			61.71* (24.02)					
A07,I, 5, 7 13140.986					279.90 (21.30)		315.65* (24.02)			
A05,I, 5, 7 11889.986					214.86 (18.03)		283.47* (21.30)			
A03,D, 6, 8 5774.986						101.35 (17.55)		122.37* (21.19)		
A01,D, 7, 9 2215.000							34.07 (15.38)		43.13* (19.47)	
P13,C, 1, 2 660.667	16.35 (24.02)	17.17* (25.23)								12.45 (18.29)
P13,C, 2, 3 649.342		16.36 (25.23)	17.11* (26.35)							
P11,C, 2, 3 1814.000		41.21 (22.72)	43.57* (24.02)							
P09,C, 2, 3 3401.481		67.18 (19.75)	73.45* (21.30)							
P09,I, 4, 5 452.638				10.28 (22.72)	10.87* (24.02)					
P07,I, 4, 5 18772.262				370.78 (19.75)	399.68* (21.30)					
P07,I, 5, 8					20.00	21.33*				

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538.742						(21.36)	(22.72)							
P05,I, 5, 7 17880.004						321.64 (18.03)			380.21* (21.30)					
P03,D, 6, 7 8484.787							113.88 (17.85)		126.45* (19.47)					
P03,D, 7, 8 2187.202									42.20 (19.47)		46.82* (21.19)			
P01,D, 7, 8 3323.000									51.11 (15.38)		55.32* (17.85)			
B13,G, 1, 3 9848.998	200.43 (20.35)			203.78* (20.69)									197.47 (20.05)	
B11,G, 1, 3 3987.973	76.93 (19.29)			81.18* (20.36)									78.98 (20.05)	
B11,G, 2, 4 7298.023		145.38 (19.93)			150.28* (20.80)									
B09,G, 2, 4 9182.998		168.97 (18.40)			183.02* (19.93)									
B07,G, 2, 4 4432.998		89.07 (15.56)			81.57* (18.40)									
B05,T, 5, 7 2562.000						43.87 (17.19)			48.23* (18.29)					
B03,T, 5, 7 1152.198						15.47 (13.43)			19.81* (17.19)					
B03,T, 6, 8 1319.801							20.56 (15.58)				24.28* (18.40)			
B01,T, 7, 8 171.000									2.30 (13.43)			2.94* (17.19)		
C13,G, 1, 3 9087.000	126.39 (14.18)			134.28* (14.81)									181.78 (20.05)	
C11,G, 1, 3 4381.998	59.51 (13.58)			62.05* (14.18)									87.86 (20.05)	
C09,G, 2, 4 1785.000		23.70 (13.28)			24.78* (13.87)									
C07,G, 2, 4 5043.998		63.10 (12.51)			66.98* (13.28)									
C05,I, 3, 5 951.000				11.25 (11.83)		12.32* (12.95)								
C03,I, 5, 7 266.000						3.50 (11.83)			3.83* (12.95)					
D13,G, 2, 4		159.87			172.63*									

10448.000		(15.30)			(16.54)									
D11,G, 2, 4 7447.000		103.17 (13.78)			114.65* (15.30)									
D09,G, 2, 5 13703.000		161.83 (11.81)				199.79* (14.58)								
D07,I, 5, 7 13873.000						178.41 (12.88)			202.27* (14.58)					
D05,I, 5, 7 16384.998						162.68 (10.57)			197.90* (12.88)					
D03,I, 6, 8 27027.998							244.33 (9.04)			319.20* (11.81)				
D01,I, 6,12 3897.000										35.23 (9.04)				
E13,G, 1, 3 7727.998	167.78 (21.68)			178.78* (23.10)								125.12 (16.17)		
E11,G, 2, 4 5805.998		116.88 (20.68)			125.68* (22.42)								98.73 (17.79)	
E09,G, 2, 4 7486.998		140.27 (18.81)			155.48* (20.86)								132.86 (17.79)	
E07,G, 2, 5 7087.000		112.96 (15.95)				140.43* (19.90)								
E05,I, 5, 7 4437.998						77.75 (17.62)			86.32* (19.90)					
E03,I, 5, 7 4819.998						67.05 (13.91)			84.45* (17.52)					
E01,I, 7, 8 7031.998									97.83 (13.91)		123.20* (17.52)			
O13,G, 1, 2 11807.000	251.84 (21.68)	260.23* (22.42)										187.69 (16.17)	206.49* (17.79)	
O11,G, 1, 2 8408.000	187.34 (19.90)	175.33* (20.85)										138.87 (16.17)	149.80* (17.79)	
O09,G, 2, 3 11185.998		210.41 (18.81)	232.80* (19.90)										199.00 (17.79)	
O07,I, 4, 5 10585.000				199.10 (18.81)	210.64* (19.90)									
O05,I, 5, 6 6856.998						118.83 (17.52)	125.22* (18.81)							
O03,I, 6, 7 7230.998							115.33 (15.95)		128.89* (17.62)					
O01,I, 7, 8									148.71	183.32*				

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10546.996							(13.81)	(15.95)		
F13,G, 1, 3	318.12		282.85*						286.83	
20057.996	(15.86)		(14.80)						(14.30)	
F11,G, 1, 3	413.94		403.02*						383.38	
28410.992	(16.29)		(15.86)						(14.30)	
F08,G, 1, 3	521.48		544.58*						478.03	
33428.000	(15.60)		(16.29)						(14.30)	
F07,C, 2, 4		322.83		386.34*						292.93
20484.707		(15.75)		(18.86)						(14.30)
F07,D, 3, 5			21.55		23.97*					
1224.283			(17.60)		(19.58)					
F06,N, 5, 7					181.06		198.70*			
9480.000					(19.14)		(21.11)			
F03,N, 5, 8						348.04		421.15*		
18921.996						(17.47)		(21.14)		
F01,N, 7, 9							261.02		348.55*	
17707.992							(14.74)		(19.67)	
G13,G, 1, 3	121.94		128.29*						181.37	
10585.000	(11.52)		(12.12)						(14.30)	
G11,G, 1, 3	131.57		140.87*						174.88	
12227.996	(10.76)		(11.52)						(14.30)	
G09,G, 1, 3	166.87		184.15*						244.74	
17114.773	(9.75)		(10.76)						(14.30)	
G09,C, 2, 4		80.28		85.29*						83.66
5850.219		(10.30)		(11.18)						(14.30)
G07,C, 2, 4		206.10		248.24*						285.56
19870.992		(10.32)		(12.43)						(14.30)
G05,D, 4, 8				332.34		373.22*				
19468.992				(17.07)		(19.17)				
G03,N, 6, 8						1276.91		1547.57*		
73208.934						(17.47)		(21.14)		
G01,N, 7, 9							59.11		78.48*	
4010.000							(14.74)		(19.57)	
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	174546.19	147519.38	2175.28	48278.78	102466.69	140976.50	47173.18	3897.00	146579.62	98521.44
M CUNITS	2742.28	2289.55	32.80	912.47	1682.70	2222.51	894.31	35.23	2147.89	1853.10
HARVEST CUTS										
ACRES	0.0	20898.65	170900.38	107138.81	55314.07	27064.73	108598.89	143287.88	31135.89	20016.00

M CUNITS	0.0	452.73	2709.48	1829.80	1059.58	519.77	2047.88	2707.05	594.29	388.08
TOTAL CUTS										
ACRES	174546.19	168218.00	173075.63	155416.56	157780.75	168041.19	155769.81	147184.88	177715.56	118537.44
M CUNITS	2742.28	2742.28	2742.28	2742.28	2742.28	2742.28	2742.28	2742.28	2742.28	2008.18

* = OVERSTORY REMOVAL CUT; ** = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	11	12	13	14	15	16	17	18	19	20
A13,C, 2, 4 886.000	17.83 (20.12)		21.07* (23.78)							17.83 (20.12)
A11,C, 2, 4 1309.000	24.33 (20.12)		28.76* (23.78)							24.33 (20.12)
A09,C, 2, 5 2669.000		51.85 (20.12)		51.85* (23.78)						
A07,I, 5, 7 13140.988				312.48 (23.78)		312.48* (23.78)				
A05,I, 5, 7 11898.898				282.98 (23.78)		282.98* (23.78)				
A03,D, 6, 8 5774.988					137.33 (23.78)		137.33* (23.78)			
A01,D, 7, 8 2215.000						52.67 (23.78)		52.67* (23.78)		
P13,C, 1, 2 880.857	13.69* (20.12)								13.69 (20.12)	14.89* (21.58)
P13,C, 2, 3 649.343	13.06 (20.12)	14.01* (21.58)								13.06 (20.12)
P11,C, 2, 3 1814.000	36.50 (20.12)	39.15* (21.58)								36.50 (20.12)
P09,C, 2, 3 3401.461	68.44 (20.12)	73.40* (21.58)								68.44 (20.12)
P09,I, 4, 5 452.536			10.75 (23.78)	10.75* (23.78)						
P07,I, 4, 5 18772.262			446.40 (23.78)	446.40* (23.78)						
P07,I, 5, 6				22.32	22.32*					

938.742				(23.78)	(23.78)					
P05,I, 5, 7 17890.004					424.47 (23.78)	424.47* (23.78)				
P03,D, 6, 7 6494.787					154.45 (23.78)	154.45* (23.78)				
P03,D, 7, 8 2167.202						51.54 (23.78)	51.54* (23.78)			
P01,D, 7, 8 3323.000						79.02 (23.78)	79.02* (23.78)			
B13,C, 1, 3 9848.988		233.03* (23.66)							197.67 (20.06)	
B11,C, 1, 3 3987.973		94.38* (23.66)							79.96 (20.06)	
B11,C, 2, 4 7295.023	146.27 (20.06)		190.18* (26.07)							146.27 (20.06)
B09,C, 2, 4 9182.988	184.12 (20.06)		239.40* (26.07)							184.12 (20.06)
B07,C, 2, 4 4432.988	88.88 (20.06)		115.57* (26.07)							88.88 (20.06)
B05,T, 5, 7 2552.000				66.53 (26.07)		66.53* (26.07)				
B03,T, 5, 7 1152.188				30.04 (26.07)		30.04* (26.07)				
B03,T, 6, 8 1318.801					34.41 (26.07)		34.41* (26.07)			
B01,T, 7, 9 171.000						4.46 (26.07)		4.46* (26.07)		
C13,C, 1, 3 8067.000		214.53* (23.66)							161.79 (20.06)	
C11,C, 1, 3 4381.988		103.68* (23.66)							87.88 (20.06)	
C09,C, 2, 4 1785.000	35.78 (20.06)		46.53* (26.07)							35.78 (20.06)
C07,C, 2, 4 6043.988	101.13 (20.06)		131.80* (26.07)							101.13 (20.06)
C05,I, 3, 5 951.000		30.98 (22.06)		24.79* (26.07)						
C03,I, 5, 7 298.000				7.90 (23.66)		7.72* (26.07)				
D13,C, 3, 4			137.62		150.99*					

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10449.000			(13.19)		(14.45)					
D11,C, 2, 4 7487.000			98.78 (13.19)		108.19* (14.45)					
D09,C, 2, 5 13703.000				180.74 (13.19)		198.01* (14.45)				
D07,I, 5, 7 13873.000					200.46 (14.45)		200.46* (14.45)			
D05,I, 5, 7 15386.996					222.37 (14.45)		222.37* (14.45)			
D03,I, 5, 8 27027.996						356.50 (13.19)		356.50* (14.45)		
D01,I, 5,12 3887.000		83.70* (13.78)								
E13,C, 1, 3 7737.996	147.84* (19.08)					137.86 (17.79)		162.85* (21.02)		
E11,C, 2, 4 5605.996		117.84* (21.02)					98.73 (17.79)		117.84* (21.02)	
E09,C, 2, 4 7486.996		186.75* (21.02)					132.86 (17.79)		186.75* (21.02)	
E07,C, 2, 5 7087.000	126.94 (17.79)		148.34* (21.02)					126.64 (17.79)		
E05,I, 5, 7 6437.996			83.28 (21.02)		83.28* (21.02)					
E03,I, 5, 7 4819.996			85.75 (17.79)		101.32* (21.02)					
E01,I, 7, 8 7031.996					147.81 (21.02)	147.81* (21.02)				
G13,C, 1, 2 11807.000						208.48 (17.79)	221.48* (19.08)			
G11,C, 1, 2 8409.000						149.50 (17.79)	160.44* (19.08)			
G09,C, 2, 3 11185.996	213.43* (19.08)						199.00 (17.79)	213.43* (19.08)		
G07,I, 4, 5 10685.000		222.50 (21.02)	222.50* (21.02)						222.50 (21.02)	
G05,I, 5, 8 8656.996			139.83 (21.02)	139.83* (21.02)						
G03,I, 5, 7 7230.996				152.00 (21.02)	152.00* (21.02)					
G01,I, 7, 8					221.70	221.70*				

10548.996					(21.02)	(21.02)				
F13,C, 1, 3 20067.996	315.31* (19.72)					286.83 (14.30)		336.36* (16.87)		
F11,C, 1, 3 26410.992	399.48* (19.72)					363.38 (14.30)		426.88* (16.87)		
F09,C, 1, 3 23428.000	525.80* (19.72)					478.03 (14.30)		563.38* (16.87)		
F07,C, 2, 4 20484.707		345.58* (16.87)					292.83 (14.30)		345.58* (16.87)	
F05,O, 3, 5 1224.283	19.25 (15.72)		22.75* (18.58)					20.55 (16.87)		
F03,N, 5, 7 9460.000			175.77 (18.58)		175.77* (18.58)					
F01,N, 5, 8 19921.996				370.15 (18.58)		370.15* (18.58)				
F01,N, 7, 9 17707.992					328.01 (18.58)		328.01* (18.58)			
G13,C, 1, 3 10885.000	186.40* (19.72)					151.37 (14.30)		176.87* (16.87)		
G11,C, 1, 3 12227.996	192.22* (19.72)					174.88 (14.30)		206.29* (16.87)		
G09,C, 1, 3 17114.773	269.04* (19.72)					244.74 (14.30)		288.73* (16.87)		
G09,C, 2, 4 5850.219		98.89* (16.87)					83.66 (14.30)		98.89* (16.87)	
G07,C, 2, 4 19970.992		338.91* (16.87)					285.58 (14.30)		338.91* (16.87)	
G05,O, 4, 6 19466.992		328.44 (16.87)		381.73* (18.58)					328.44 (16.87)	
G03,N, 5, 6 73205.938				1360.17 (18.58)		1360.17* (18.58)				
G01,N, 7, 9 4010.000					74.51 (18.58)		74.51* (18.58)			
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	43081.05	33873.09	82525.79	144041.61	70736.55	27138.19	173807.55	70884.65	36247.80	65783.75
M CUNITS	651.13	523.61	1188.47	2784.43	1523.69	610.82	2949.45	1093.55	706.95	1387.39
HARVEST CUTS										
ACRES	136430.21	98418.55	48701.29	48870.78	44823.73	170782.75	41334.55	81684.00	184777.56	60049.57

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10449.000			(13.19)		(14.45)						
D11,C, 2, 6 7487.000			88.75 (13.19)		108.19* (14.45)						
D09,C, 2, 5 13703.000				180.74 (13.19)		198.01* (14.45)					
D07,I, 5, 7 13873.000						200.46 (14.45)		200.46* (14.45)			
D05,I, 5, 7 15388.996						222.37 (14.45)		222.37* (14.45)			
D03,I, 5, 8 27027.996							356.60 (13.19)		290.58* (14.45)		
D01,I, 8,12 3897.000		53.70* (13.78)									
E13,C, 1, 2 7727.996	147.84* (19.06)						137.65 (17.78)		182.69* (21.02)		
E11,C, 2, 4 8805.996		117.84* (21.02)						99.73 (17.78)		117.84* (21.02)	
E09,C, 2, 4 7488.996		156.78* (21.02)						132.88 (17.78)		156.78* (21.02)	
E07,C, 2, 5 7857.000	128.54 (17.78)		148.34* (21.02)						126.54 (17.78)		
E05,I, 5, 7 4437.996			93.28 (21.02)		93.28* (21.02)						
E03,I, 5, 7 4819.996			85.75 (17.78)		101.32* (21.02)						
E01,I, 7, 9 7031.996					147.81 (21.02)		147.81* (21.02)				
O13,C, 1, 2 11807.000							209.49 (17.78)	231.48* (19.08)			
O11,C, 1, 2 8408.000							149.60 (17.78)	180.44* (19.08)			
O09,C, 2, 3 11185.996	213.43* (19.08)							189.00 (17.78)	213.43* (19.08)		
O07,I, 4, 5 10585.000		222.50 (21.02)	222.50* (21.02)							222.50 (21.02)	
O05,I, 5, 6 8856.996			138.83 (21.02)	138.83* (21.02)							
O03,I, 6, 7 7230.996				152.00 (21.02)	152.00* (21.02)						
O01,I, 7, 8					221.70	221.70*					

10548.996					(21.02)	(21.02)					
F13,C, 1, 3 20087.996	315.31* (15.72)						285.82 (14.30)		338.38* (16.87)		
F11,C, 1, 3 25410.992	399.48* (15.72)						363.38 (14.30)		428.68* (16.87)		
F09,C, 1, 3 23429.000	535.50* (15.72)						478.03 (14.30)		583.85* (16.87)		
F07,C, 2, 4 20484.707		345.58* (16.87)						292.93 (14.30)		345.58* (16.87)	
F07,D, 3, 5 1224.283	19.25 (15.72)		22.75* (18.58)						20.85 (16.87)		
F05,N, 5, 7 8480.000			175.77 (18.58)		175.77* (18.58)						
F03,N, 6, 8 18921.996				370.15 (18.58)		370.15* (18.58)					
F01,N, 7, 9 17707.992					329.01 (18.58)		329.01* (18.58)				
G13,C, 1, 3 10585.000	168.40* (15.72)						151.37 (14.30)		178.57* (16.87)		
G11,C, 1, 3 12227.996	192.22* (15.72)						174.88 (14.30)		206.29* (16.87)		
G09,C, 1, 3 17114.772	269.04* (15.72)						244.74 (14.30)		288.73* (16.87)		
G08,C, 2, 4 8850.218		98.69* (16.87)						83.95 (14.30)		98.69* (16.87)	
G07,C, 2, 4 18970.992		336.91* (16.87)						285.58 (14.30)		336.91* (16.87)	
G05,D, 4, 6 19468.992		328.44 (16.87)		381.73* (18.58)						328.44 (16.87)	
G03,N, 6, 8 73205.938				1380.17 (18.58)		1380.17* (18.58)					
G01,N, 7, 9 4010.000					74.51 (18.58)		74.51* (18.58)				
OVERSTORY REMOVAL CUTS											
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
INTERMEDIATE CUTS											
ACRES	43861.09	33873.99	62535.75	144041.81	70736.95	37136.19	173807.56	70554.88	36247.90	65763.75	
M CUNITS	861.13	623.81	1186.47	2784.42	1523.69	810.52	2549.45	1083.58	706.93	1287.26	
HARVEST CUTS											
ACRES	138430.31	98416.56	48701.29	48870.78	44823.73	170783.75	41234.98	51664.00	184777.58	80048.57	

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M CUNITS	2343.70	1881.81	1165.58	1044.71	803.85	3428.70	853.83	881.87	2771.23	1070.45
TOTAL CUTS										
ACRES	182411.38	129990.50	111237.08	192912.58	115560.35	207901.94	214942.50	122218.81	201025.44	125803.31
M CUNITS	3103.83	2505.22	2355.05	3829.14	2327.55	4039.23	3403.08	1955.43	3478.30	2337.73

* = OVERSTORY REMOVAL CUT, * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	21	22	23	24	25	26	27	28	29	30
					TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)					
A13,G, 2, 4 886.000		21.07* (23.78)								
A11,G, 2, 4 1209.000		28.75* (23.78)								
A09,G, 3, 5 2569.000	51.69 (20.12)		61.09* (23.78)							
A07,I, 5, 7 13140.996			312.49 (23.78)							
A05,I, 5, 7 11898.996			282.98 (23.78)							
A03,D, 6, 8 5774.998				137.23 (23.78)						
A01,D, 7, 9 2215.000										
P13,G, 1, 2 680.657										
P13,G, 2, 3 649.343	14.01* (21.58)									
P11,G, 2, 3 1814.000	39.15* (21.58)									
P09,G, 2, 3 3401.481	73.40* (21.58)									
P09,I, 4, 5 482.538		10.78 (23.78)	10.78* (23.78)							
P07,I, 4, 5 18772.262		445.40 (23.78)	445.40* (23.78)							
P07,I, 5, 6			22.32	22.32*						

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838.742			(23.78)	(23.78)
P05,I, 5, 7 17880.006				424.47 (23.78)
P03,D, 6, 7 6494.797				164.46 (23.78)
P03,D, 7, 8 2187.202				
P01,D, 7, 8 3323.000				
B13,G, 1, 3 9848.998	256.78* (26.07)			
B11,G, 1, 3 3987.973	103.97* (26.07)			
B11,G, 2, 4 7286.023		190.18* (26.07)		
B09,G, 2, 4 9182.998		339.40* (26.07)		
B07,G, 2, 4 4432.998		115.57* (26.07)		
B05,T, 5, 7 2552.000			66.53 (26.07)	
B03,T, 5, 7 1152.189			30.04 (26.07)	
B03,T, 6, 8 1319.801				34.41 (26.07)
B01,T, 7, 9 171.000				
C13,G, 1, 3 9087.000	236.38* (26.07)			
C11,G, 1, 3 4361.998	114.24* (26.07)			
C09,G, 2, 4 1785.000		46.53* (26.07)		
C07,G, 2, 4 5043.998		131.50* (26.07)		
C05,I, 3, 5 951.000	22.50 (22.86)		24.79* (26.07)	
C03,I, 5, 7 296.000			7.00 (22.86)	
D13,G, 2, 4				127.82

10449.000				(13.19)
D11,G, 2, 4 7487.000				66.75 (13.19)
D09,G, 2, 5 13702.000				
D07,I, 5, 7 12872.000				
D05,I, 5, 7 15388.998				
D03,I, 6, 8 27027.998				
D01,I, 8,12 3897.000	55.31 (16.45)		55.31* (16.45)	
E13,G, 1, 3 7737.998				
E11,G, 2, 4 5806.998				
E09,G, 2, 4 7456.998				
E07,G, 2, 5 7057.000	148.34* (21.02)			
E05,I, 5, 7 4437.998	93.29 (21.02)		93.29* (21.02)	
E03,I, 5, 7 4819.998	85.75 (17.79)		101.33* (21.02)	
E01,I, 7, 9 7031.998			147.81 (21.02)	
O13,G, 1, 3 11507.000				
O11,G, 1, 3 8408.000				
O09,G, 2, 3 11185.998				
O07,I, 4, 5 10585.000	222.50* (21.02)			
O05,I, 5, 6 9696.998	138.92 (21.02)	138.93* (21.02)		
O03,I, 6, 7 7230.998		152.00 (21.02)	152.00* (21.02)	
O01,I, 7, 8			221.70	221.70*

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10546.996			(21.02)	(21.02)						
F13,C, 1, 3										
20057.996										
F11,C, 1, 3										
26410.992										
F09,C, 1, 3										
33428.000										
F07,C, 2, 4										
20484.707										
F07,O, 3, 5	22.75*									
1224.282	(18.58)									
F05,N, 5, 7	175.77		175.77*							
9460.000	(18.58)		(18.58)							
F03,N, 6, 8		370.15		370.15*						
19921.996		(18.58)		(18.58)						
F01,N, 7, 9			329.01							
17707.992			(18.58)							
G13,C, 1, 3										
10585.000										
G11,C, 1, 3										
12227.996										
G09,C, 1, 3										
17114.773										
G09,C, 3, 4										
5880.219										
G07,C, 2, 4										
10970.992										
G05,O, 4, 6		381.73*								
19486.992		(18.58)								
G03,N, 6, 8		1380.17		1380.17*						
73206.828		(18.58)		(18.58)						
G01,N, 7, 9			74.51							
4010.000			(18.58)							
OVERSTORY REMOVAL CUTS										
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INTERMEDIATE CUTS										
ACRES	32781.99	118582.69	89276.86	49375.60	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	825.23	2339.46	1494.40	887.22	0.0	0.0	0.0	0.0	0.0	0.0
HARVEST CUTS										
ACRES	52017.05	55980.89	32590.78	104513.63	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1231.48	1274.67	1121.73	1874.34	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL CUTS										
ACRES	84809.00	175544.62	121867.63	153889.19	0.0	0.0	0.0	0.0	0.0	0.0
M CUNITS	1856.72	3614.14	2616.13	2861.57	0.0	0.0	0.0	0.0	0.0	0.0

→ = OVERSTORY REMOVAL CUT. • = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 24680.38 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,G, 2, 4	885.00	46.84	52.84
A11,G, 2, 4	1209.00	57.97	47.95
A09,G, 2, 5	2588.00	112.48	43.77
A07,I, 5, 7	13141.00	595.85	45.32
E05,I, 5, 7	11900.00	466.03	39.33
A03,D, 5, 8	5775.00	223.72	38.74
A01,D, 7, 8	2215.00	77.19	34.85
P13,G, 1, 2	680.85	33.52	49.25
P13,G, 2, 3	648.34	33.48	51.58
P11,G, 2, 3	1814.00	84.78	46.74
P09,G, 2, 3	3401.46	139.83	41.05
P08,I, 4, 5	452.84	21.18	46.74
P07,I, 4, 5	18772.28	770.80	41.05
P07,I, 5, 6	938.74	41.32	44.02
P05,I, 5, 7	17850.00	702.04	39.33
P03,D, 6, 7	6494.80	240.44	37.02
P03,D, 7, 8	2187.20	88.12	40.86
P01,D, 7, 8	3323.00	109.43	32.93
B13,G, 1, 3	9848.00	404.20	41.04
B11,G, 1, 3	3967.97	158.08	39.84
B11,G, 2, 4	7295.02	295.67	40.53
B09,G, 2, 4	8183.00	351.98	36.33
B07,G, 2, 4	4433.00	150.63	33.98
B05,T, 5, 7	2552.00	93.10	36.46
B03,T, 5, 7	1152.20	35.26	30.62
B03,T, 6, 8	1319.80	44.85	33.98
B01,T, 7, 8	171.00	5.24	30.62
C13,G, 1, 3	9067.00	262.97	28.97
C11,G, 1, 3	4382.00	121.55	27.74
C09,G, 2, 4	1785.00	48.46	27.15
C07,G, 2, 4	5044.00	130.08	25.79
C05,I, 3, 6	951.00	23.57	24.78
C03,I, 6, 7	296.00	7.33	24.78
D13,G, 2, 4	10448.00	332.70	31.84
D11,G, 2, 4	7487.00	217.72	29.06
D09,G, 2, 5	13703.00	361.62	26.39
D07,I, 5, 7	13873.00	380.87	27.44
D05,I, 5, 7	16389.00	380.58	23.42
D03,I, 5, 8	27028.00	563.53	20.85
D01,I, 8,12	3897.00	35.23	9.04
E13,G, 1, 3	7738.00	471.63	60.95
E11,G, 2, 4	5606.00	242.57	43.27

E09,G, 2, 4	7487.00	288.74	38.56
E07,G, 2, 5	7057.00	262.89	36.85
E05,I, 5, 7	4438.00	166.07	37.42
E03,I, 5, 7	4820.00	151.49	31.43
E01,I, 7, 8	7032.00	221.02	31.43
O13,G, 1, 2	11807.00	699.55	60.27
O11,G, 1, 2	8488.00	478.84	56.92
O09,G, 2, 3	11188.00	433.01	38.71
O07,I, 4, 5	10585.00	409.78	38.71
O05,I, 5, 6	6857.00	241.85	35.33
O03,I, 5, 7	7231.00	242.02	33.47
O01,I, 7, 8	10947.00	314.83	28.85
F13,G, 1, 3	20058.00	897.80	44.76
F11,G, 1, 3	25410.88	1180.34	46.46
F09,G, 1, 3	33429.00	1544.06	46.19
F07,C, 2, 4	20484.71	708.88	34.61
F07,C, 3, 5	1224.28	46.52	37.18
F05,N, 5, 7	9482.00	380.76	40.26
F03,N, 5, 8	19932.00	788.19	38.81
F01,N, 7, 8	17707.98	607.55	34.31
C13,G, 1, 3	10585.00	401.59	37.94
C11,G, 1, 3	12228.00	447.30	36.58
C09,G, 1, 3	17114.77	585.78	34.61
C09,G, 2, 4	5850.22	125.55	21.46
C07,C, 2, 4	19870.98	454.34	22.78
C05,C, 4, 6	18468.98	705.58	38.24
C03,N, 6, 8	73205.94	2826.48	38.61
C01,N, 7, 9	4010.00	137.58	34.31

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9
TOTAL OBJECTIVE VALUE = 24680.38 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2904.46 M CUNITS/DECADE

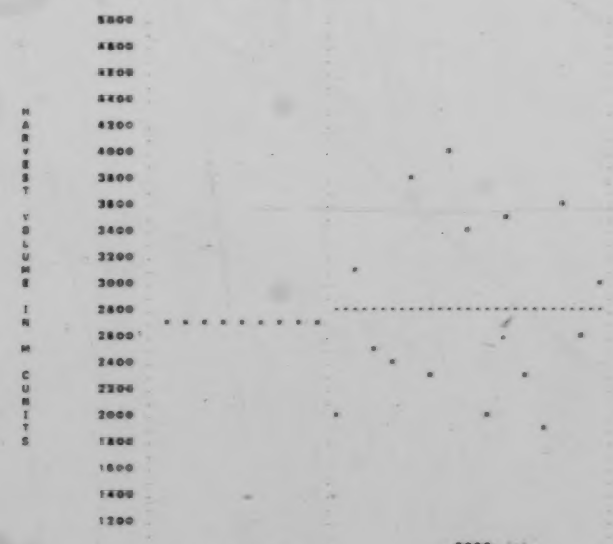
AVERAGE OF POST-CONVERSION PERIODIC HARVESTS= 2826.14 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	174848.	2742.28	2742.28	0.	0.0	0.0	174848.	2742.28	2742.28
2	0.	0.0	0.0	147819.	2389.55	5031.83	20897.	462.73	462.73	168216.	2742.28	5444.55
3	0.	0.0	0.0	2178.	32.80	5064.62	1760900.	2709.48	3172.21	173078.	2742.28	8226.82
4	0.	0.0	0.0	49278.	912.47	5977.09	1071400.	1429.80	4602.01	156419.	2742.28	10968.10
5	0.	0.0	0.0	102467.	1582.70	7559.79	85314.	1068.53	5671.59	187781.	2742.28	13711.37
6	0.	0.0	0.0	140977.	2222.51	9782.29	27065.	319.77	5871.35	168041.	2742.28	16453.64
7	0.	0.0	0.0	47172.	694.31	10476.61	1084897.	2047.96	7919.31	195770.	2742.28	19195.92
8	0.	0.0	0.0	3887.	35.33	10511.83	1432288.	2707.05	11336.38	147188.	2742.28	21938.20
9	0.	0.0	0.0	148560.	2147.98	12789.82	31138.	384.29	11920.64	177714.	2742.28	24680.47
10	0.	0.0	0.0	88521.	1583.10	14412.91	290118.	359.05	12279.73	118527.	2089.18	26869.65
11	0.	0.0	0.0	43981.	881.13	15274.04	1284430.	2242.70	14518.43	182411.	2103.83	28793.46
12	0.	0.0	0.0	33874.	633.81	15887.84	89417.	1881.81	16401.04	129991.	2908.22	32288.70
13	0.	0.0	0.0	82536.	1188.47	17076.11	48701.	1188.58	17587.63	111237.	2355.08	34852.76
14	0.	0.0	0.0	144043.	2784.43	19870.54	48871.	1044.71	18632.34	192913.	3829.14	38682.89
15	0.	0.0	0.0	70737.	1523.89	21394.23	44826.	803.85	19436.20	115560.	2327.69	40810.44
16	0.	0.0	0.0	37138.	810.52	22004.74	1707764.	3438.70	22844.90	207902.	4039.23	44849.66
17	0.	0.0	0.0	173808.	2949.45	24954.19	41238.	883.83	23698.52	214943.	3403.08	48252.74
18	0.	0.0	0.0	70955.	1082.58	26037.75	51884.	881.87	24580.39	122219.	1956.63	50209.17
19	0.	0.0	0.0	36248.	706.96	26394.72	1844778.	2771.23	27351.62	201026.	3476.20	53686.37
20	0.	0.0	0.0	85754.	1287.36	27832.08	80080.	1070.45	28402.07	125803.	2327.72	56014.10
21	0.	0.0	0.0	32792.	835.23	28247.23	52017.	1231.49	29633.56	84809.	1656.72	57680.82
22	0.	0.0	0.0	119584.	2339.48	30586.70	55981.	1274.87	30908.22	178545.	3614.14	61494.96
23	0.	0.0	0.0	69277.	1494.40	32081.10	52891.	1121.73	32029.95	121868.	2615.12	64111.08
24	0.	0.0	0.0	48276.	987.23	33068.33	1046514.	1974.24	34004.28	183989.	2961.57	67072.83

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVLO3 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 9



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

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1.1 PROBLEM TITLE

CANFOR TIMBER RAM ANALYSIS, RUN N38C, COMBINED IH, FIR REG WS
ALT C, CUT, REGEN=6.2 YR LAG,4% CULL,NORMAL STOCKING, NOV. 28,1982

1.2 TYPE OF RUN

PRINT OUT DATA AND GENERATE LP MATRIX ON TAPE=2 REPORT TAPE=3

1.3 SCOPE OF ANALYSIS

SILVICULTURE LP

1.4 PROBLEM PARAMETERS

LENGTH OF THE FIRST PLANNING PERIOD (IN YEARS) = 10
CURRENT VOLUME LEVEL = 2800.00
LENGTH OF CONVERSION PERIOD (IN DECADES) = 10
TOTAL TIME SPANNED BY THE PROBLEM (IN DECADES) = 24
OLDEST AGE TO BE REACHED BY ANY TIMBER CLASS (IN DECADES) = 18

1.5 DEFINITION OF HARVEST CONSTRAINTS

VOLUME CONTROL AND REGULATION

1.6 TYPE OF HARVEST CONTROL CONSTRAINTS

SEQUENTIAL UPPER AND LOWER

2. CONTROL AND REGULATION CONSTRAINTS

DEGREE OF HARVEST CONTROL

	LOWER	UPPER
CONVERSION PERIOD		
1	0.990	0.990
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	0.990	0.990

DEGREE OF HARVEST REGULATION

CONVERSION LINK	0.990	0.0
POST-CONVERSION PERIOD		
11	0.990	0.990
12	0.990	0.990
13	0.990	0.990
14	0.990	0.990
15	0.990	0.990
16	0.990	0.990
17	0.990	0.990
18	0.990	0.990
19	0.990	0.990
20	0.990	0.990
21	0.990	0.990
22	0.990	0.990
23	0.990	0.990
24	0.990	0.990

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3. PERIODIC CONSTRAINTS

LP ROW NAME	MAX ACRES GEN IMP STOCK PAC*	HARVEST VOLUME PTV*
LAST CONSTRAINED PERIOD	-1	10
PERIOD		
1		0.0
2		0.0
3		0.0
4		0.0
5		0.0
6		0.0
7		0.0
8		0.0
9		0.0
10		2904.46

NOTE: IN LP ROW NAMES * IS REPLACED BY THE PERIOD NUMBER

4. ALTERNATIVE OBJECTIVES

PERIODS UP TO WHICH THE INDICES OF PERFORMANCE WILL BE OPTIMIZED:

INDEX OF PERFORMANCE	LP ROW NAME	NUMBER OF OBJECTIVES	ALTERNATIVE OBJECTIVES 1	2	3	4	5	6
HARVEST VOLUME	TVLO/	4	1	2	10	24		

NOTE: IN LP ROW NAMES * IS REPLACED BY THE DISCOUNT RATE NUMBER
/ IS REPLACED BY THE OBJECTIVE NUMBER

5. TIMBER CLASS DATA

CLASS NAME	STAND TYPE	AGE	TYPE OF CONSTRAINT	AREA	PERCENT ACCESSIBLE IN PERIODS 1	2	3	4	5
A13		13	L	0.885	1.00				
A11		11	L	1.209	1.00				
A09		9	L	2.569	1.00				
A07		7	L	13.141	1.00				
A05		5	L	11.900	1.00				
A03		3	L	5.775	1.00				
A01		1	L	2.215	1.00				
P13		13	L	1.330	1.00				
P11		11	L	1.814	1.00				
P09		9	L	3.854	1.00				
P07		7	L	19.711	1.00				
P05		5	L	17.850	1.00				
P03		3	L	8.662	1.00				
P01		1	L	3.323	1.00				
B13		13	L	9.549	1.00				
B11		11	L	11.283	1.00				
B09		9	L	9.183	1.00				
B07		7	L	4.433	1.00				
B05		5	L	2.882	1.00				
B03		3	L	2.472	1.00				
B01		1	L	0.171	1.00				
C13		13	L	9.087	1.00				
C11		11	L	4.382	1.00				
C09		9	L	1.785	1.00				
C07		7	L	5.044	1.00				
C05		5	L	0.981	1.00				
C03		3	L	0.296	1.00				
D13		13	L	10.449	1.00				
D11		11	L	7.487	1.00				
D09		9	L	13.703	1.00				
D07		7	L	13.873	1.00				
D05		5	L	15.388	1.00				
D03		3	L	27.028	1.00				
D01		1	L	3.897	1.00				
E13		13	L	7.738	1.00				
E11		11	L	5.806	1.00				
E09		9	L	7.487	1.00				
E07		7	L	7.057	1.00				
E05		5	L	4.436	1.00				
E03		3	L	4.820	1.00				
E01		1	L	7.032	1.00				
013		13	L	11.807	1.00				
011		11	L	8.409	1.00				
009		9	L	11.186	1.00				
007		7	L	10.585	1.00				
005		5	L	8.857	1.00				
003		3	L	7.231	1.00				
001		1	L	10.547	1.00				
F13		13	L	20.058	1.00				
F11		11	L	28.411	1.00				
F09		9	L	33.428	1.00				
F07		7	L	21.709	1.00				
F05		5	L	8.480	1.00				
F03		3	L	18.822	1.00				
F01		1	L	17.708	1.00				

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C13	13	L	10.885	1.00
C11	11	L	12.228	1.00
C09	9	L	22.965	1.00
C07	7	L	19.971	1.00
C05	5	L	18.489	1.00
C03	3	L	73.206	1.00
C01	1	L	4.010	1.00

THE TOTAL AREA OF THE TIMBER CLASSES IN THE PROBLEM IS 666.031 THOUSAND ACRES

6. MANAGEMENT ALTERNATIVES

CLASS NAME	MGMT CODES REG	NON-GEN*	VOLUME CLASS	ECONOMIC CLASS	PERIOD OF IMP SUSTAINED YIELD	TYPE OF MGMT	FIRST ENTRY	LAST ENTRY	FIRST HARVEST	LAST HARVEST	MIN NO OF CUTS	MAX NO OF CUTS
A13	G		1	0	4	1	1	2	3	5	3	5
A13	I		9	0	6	1	3	4	5	6	3	5
A11	G		1	0	4	1	1	2	3	5	3	5
A11	I		9	0	6	1	3	6	5	8	3	5
A09	G		1	0	4	1	1	2	3	5	3	5
A09	I		9	0	6	1	3	8	5	10	3	5
A07	G		1	0	4	1	1	2	3	5	3	5
A07	I		9	0	6	1	3	10	5	12	3	5
A05	I		9	0	6	1	3	12	5	14	3	5
A03	I		9	0	6	1	5	14	7	16	3	5
A03	D		21	0	6	1	5	14	7	16	3	5
A01	I		9	0	6	1	7	16	9	18	3	5
A01	D		22	0	6	1	7	16	9	18	3	5
P13	G		23	0	3	1	1	2	2	3	2	4
P13	I		24	0	5	1	3	5	4	6	2	4
P11	G		23	0	3	1	1	2	2	3	2	4
P11	I		24	0	5	1	3	7	4	8	2	4
P09	G		23	0	3	1	1	2	2	3	2	4
P09	I		24	0	5	1	3	9	4	10	2	4
P07	G		23	0	3	1	1	2	2	3	2	4
P07	I		24	0	5	1	3	11	4	12	2	4
P05	I		24	0	5	1	3	13	4	14	2	4
P03	I		24	0	5	1	5	15	6	16	2	4
P03	D		25	0	5	1	5	15	6	16	2	4
P01	I		24	0	5	1	7	17	8	18	2	4
P01	D		26	0	5	1	7	17	8	18	2	4
M13	G		2	0	4	1	1	2	3	5	3	5
M13	I		10	0	6	1	3	4	5	6	3	5
M11	G		2	0	4	1	1	2	3	5	3	5
M11	I		10	0	6	1	3	4	5	6	3	5
M11	T		11	0	-1	1	5	6	7	8	3	5
M09	G		2	0	4	1	1	2	3	5	3	5
M09	I		10	0	6	1	3	4	5	6	3	3
M09	T		11	0	-1	1	5	8	7	10	3	5
M07	G		2	0	4	1	1	2	3	5	3	5
M07	I		10	0	6	1	3	4	5	6	3	3
M07	T		11	0	-1	1	5	10	7	12	3	5
M06	I		10	0	6	1	3	4	5	6	3	3
M05	T		11	0	-1	1	5	12	7	14	3	5
M03	T		11	0	-1	1	5	14	7	16	3	5
M01	T		11	0	-1	1	7	16	9	18	3	5
C13	G		3	0	4	1	1	2	3	5	3	5
C13	I		12	0	6	1	3	4	5	6	3	5
C11	G		3	0	4	1	1	2	3	5	3	5
C11	I		12	0	6	1	3	4	5	6	3	3
C11	T		13	0	-1	1	5	6	7	8	3	5
C09	G		3	0	4	1	1	2	3	5	3	5
C09	I		12	0	6	1	3	4	5	6	3	3
C09	T		13	0	-1	1	5	8	7	10	3	5
C07	G		3	0	4	1	1	2	3	5	3	5
C07	I		12	0	6	1	3	4	5	6	3	3
C07	T		13	0	-1	1	5	10	7	12	3	5
C05	I		12	0	6	1	3	4	5	6	3	3
C05	T		13	0	-1	1	5	12	7	14	3	5
C03	I		12	0	6	1	5	14	7	16	3	5

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B13	E	4	0	4	1	1	2	3	5	3	5
B13	I	14	0	8	1	2	4	5	8	3	5
B11	E	4	0	4	1	1	2	3	5	3	5
B11	I	14	0	8	1	2	6	5	8	3	5
B09	E	4	0	4	1	1	2	3	5	3	5
B09	I	14	0	8	1	2	6	5	10	3	5
B07	E	4	0	4	1	1	2	3	5	3	5
B07	I	14	0	8	1	2	10	5	12	3	5
B05	I	14	0	8	1	2	12	5	14	3	5
B03	I	4	0	8	1	5	14	7	16	3	5
B01	I	14	0	8	1	7	16	9	18	3	5
E13	E	5	0	4	1	1	2	3	5	3	5
E13	I	15	0	8	1	2	4	5	8	3	5
E11	E	5	0	4	1	1	2	3	5	3	5
E11	I	15	0	8	1	2	6	5	8	3	5
E09	E	5	0	4	1	1	2	3	5	3	5
E09	I	15	0	8	1	2	8	5	10	3	5
E07	E	5	0	4	1	1	2	3	5	3	5
E07	I	15	0	8	1	2	10	5	12	3	5
E05	I	15	0	8	1	2	12	5	14	3	5
E03	I	5	0	8	1	5	14	7	16	3	5
E01	I	15	0	8	1	7	16	9	18	3	5
B13	E	27	0	3	1	1	2	2	3	2	4
B13	I	28	0	8	1	2	6	4	8	2	4
B11	E	27	0	3	1	1	2	2	3	2	4
B11	I	28	0	8	1	2	7	4	8	2	4
B09	E	27	0	3	1	1	2	2	3	2	4
B09	I	28	0	8	1	2	8	4	10	2	4
B07	E	27	0	3	1	1	2	2	3	2	4
B07	I	28	0	8	1	2	11	4	12	2	4
B05	I	28	0	8	1	2	13	4	14	2	4
B03	I	28	0	8	1	5	16	6	16	2	4
B01	I	28	0	8	1	7	17	8	18	2	4
F13	E	7	0	4	1	1	2	3	5	3	5
F13	I	19	0	8	1	2	6	5	8	3	5
F11	E	7	0	4	1	1	2	3	5	3	5
F11	I	19	0	8	1	2	6	5	8	3	5
F11	T	20	0	-1	1	5	6	7	8	3	5
F09	E	7	0	4	1	1	2	3	5	3	5
F09	I	19	0	8	1	2	4	5	8	3	3
F09	T	20	0	-1	1	5	6	7	10	3	5
F07	E	7	0	4	1	1	2	3	5	3	5
F07	C	18	0	6	1	1	2	3	5	3	5
F07	I	19	0	8	1	2	4	5	8	3	3
F07	S	29	0	8	1	3	4	5	6	3	3
F07	T	20	0	-1	1	5	10	7	12	3	5
F07	N	30	0	-1	1	5	10	7	12	3	5
F05	I	19	0	8	1	3	4	5	8	3	3
F05	S	31	0	8	1	3	4	5	8	3	3
F05	T	20	0	-1	1	5	12	7	14	3	5
F05	N	32	0	-1	1	5	12	7	14	3	5
F03	T	20	0	-1	1	5	14	7	16	3	5
F03	N	6	0	-1	1	5	14	7	16	3	5
F01	T	20	0	-1	1	7	16	9	18	3	5
F01	N	6	0	-1	1	7	16	9	18	3	5
G13	E	6	0	4	1	1	2	3	5	3	5
G13	I	16	0	8	1	3	4	5	8	3	5
G11	E	6	0	4	1	1	2	3	5	3	5
G11	I	16	0	8	1	3	6	5	8	3	3
G11	T	17	0	-1	1	5	6	7	8	3	5

G09	E	6	0	4	1	1	2	3	5	3	5
G09	I	16	0	8	1	3	4	5	8	3	3
G09	T	17	0	-1	1	5	8	7	10	3	5
G07	E	6	0	4	1	1	2	3	5	3	5
G07	C	23	0	4	1	1	2	3	5	3	5
G07	I	16	0	8	1	3	4	5	8	3	3
G07	S	34	0	8	1	3	4	5	6	3	3
G07	T	17	0	-1	1	5	10	7	12	3	5
G07	N	38	0	-1	1	5	10	7	12	3	5
G05	I	16	0	8	1	3	6	5	8	3	3
G05	S	35	0	8	1	3	4	5	6	3	3
G05	T	17	0	-1	1	5	12	7	14	3	5
G05	N	37	0	-1	1	5	12	7	14	3	5
G03	T	17	0	-1	1	5	14	7	16	3	5
G03	N	6	0	-1	1	5	14	7	16	3	5
G01	T	17	0	-1	1	7	16	9	18	3	5
G01	N	6	0	-1	1	7	16	9	18	3	5

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9. VOLUME DATA

VOL CLASS 1 (PINE 8/4)
CLASS NUMBER 1

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.94	0.0	13.94	0.0	18.29	20.13
8	16.11	0.0	16.11	0.0	0.0	0.0
9	18.03	0.0	18.03	0.0	21.58	23.76
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.39	0.0	28.39	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 2 (WHITE SPRUCE 8/4)
CLASS NUMBER 2

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.26	0.0	8.26	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	12.43	0.0	12.43	0.0	20.05	20.05
8	15.58	0.0	15.58	0.0	0.0	0.0
9	17.19	0.0	17.19	0.0	23.88	28.07
10	18.60	0.0	18.60	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.83	0.0	19.83	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.80	0.0	20.80	0.0	0.0	0.0
15	20.88	0.0	20.88	0.0	0.0	0.0
16	20.85	0.0	20.85	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

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VOL CLASS 3 (BALSAM FIR 6/4 REGENERATES AS WS)
CLASS NUMBER 3

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.26	0.0	7.26	0.0	0.0	0.0
6	10.54	0.0	10.54	0.0	0.0	0.0
7	11.63	0.0	11.63	0.0	20.05	20.05
8	12.51	0.0	12.51	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	23.86	28.07
10	13.28	0.0	13.28	0.0	0.0	0.0
11	13.58	0.0	13.58	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.16	0.0	14.16	0.0	0.0	0.0
14	14.46	0.0	14.46	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

VOL CLASS 4 (BLACK SPRUCE 6/4)
CLASS NUMBER 4

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 11

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.04	0.0	7.04	0.0	0.0	0.0
8	8.04	0.0	8.04	0.0	0.0	0.0
9	10.57	0.0	10.57	0.0	12.57	13.18
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.86	0.0	12.86	0.0	13.70	14.45
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.58	0.0	14.58	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.94	0.0	15.94	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.60	0.0	17.60	0.0	0.0	0.0

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VOL CLASS 5 (SW-PL 5/4)
CLASS NUMBER 5

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	16.17	17.79
7	13.81	0.0	13.81	0.0	0.0	0.0
8	16.95	0.0	16.95	0.0	19.08	21.02
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.90	0.0	19.90	0.0	0.0	0.0
12	20.85	0.0	20.85	0.0	0.0	0.0
13	21.88	0.0	21.88	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 6 (MS 6/4)
CLASS NUMBER 6

[redacted] ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	14.30	14.30
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.06	0.0	9.06	0.0	15.72	15.87
9	9.75	0.0	9.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.76	0.0	10.76	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.36	0.0	12.36	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

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VOL CLASS 7 (SW 8/4)
CLASS NUMBER 7

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	14.30	14.30
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.89	0.0	14.89	0.0	15.72	14.87
9	15.80	0.0	15.80	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.86	0.0	15.86	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

VOL CLASS 8 (MW - AW 8/4)
CLASS NUMBER 8

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.94	0.0	7.94	0.0	0.0	0.0
6	11.19	0.0	11.19	0.0	13.53	0.0
7	14.74	0.0	14.74	0.0	0.0	0.0
8	17.47	0.0	17.47	0.0	14.53	0.0
9	19.57	0.0	19.57	0.0	0.0	0.0
10	21.14	0.0	21.14	0.0	0.0	0.0
11	22.24	0.0	22.24	0.0	0.0	0.0
12	22.91	0.0	22.91	0.0	0.0	0.0
13	23.17	0.0	23.17	0.0	0.0	0.0
14	23.05	0.0	23.05	0.0	0.0	0.0
15	22.55	0.0	22.55	0.0	0.0	0.0
16	21.69	0.0	21.69	0.0	0.0	0.0
17	20.48	0.0	20.48	0.0	0.0	0.0
18	18.92	0.0	18.92	0.0	0.0	0.0

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VOL CLASS 9 (PINE 6/4)
CLASS NUMBER 9

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	21.84	23.79
8	16.11	0.0	16.11	0.0	0.0	0.0
9	18.03	0.0	18.03	0.0	23.79	23.74
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	28.38	0.0	28.38	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 10 (WHITE SPRUCE 6/4)
CLASS NUMBER 10

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.28	0.0	8.28	0.0	0.0	0.0
6	10.90	0.0	10.90	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	23.05	23.86
8	15.56	0.0	15.56	0.0	0.0	0.0
9	17.19	0.0	17.13	0.0	28.07	28.07
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.29	0.0	19.29	0.0	0.0	0.0
12	19.93	0.0	19.93	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.49	0.0	20.49	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

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VOL CLASS 11 (WHITE SPRUCE 8/4)
CLASS NUMBER 11

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.28	0.0	5.28	0.0	0.0	0.0
6	10.50	0.0	10.50	0.0	0.0	0.0
7	13.43	0.0	13.43	0.0	28.07	0.0
8	15.58	0.0	15.58	0.0	0.0	0.0
9	17.18	0.0	17.18	0.0	28.07	0.0
10	18.40	0.0	18.40	0.0	0.0	0.0
11	19.28	0.0	19.28	0.0	0.0	0.0
12	19.92	0.0	19.92	0.0	0.0	0.0
13	20.35	0.0	20.35	0.0	0.0	0.0
14	20.60	0.0	20.60	0.0	0.0	0.0
15	20.69	0.0	20.69	0.0	0.0	0.0
16	20.65	0.0	20.65	0.0	0.0	0.0
17	20.48	0.0	20.48	0.0	0.0	0.0
18	20.23	0.0	20.23	0.0	0.0	0.0

VOL CLASS 12 (BALSAM FIR 8/4,REGENERATES AS WS)
CLASS NUMBER 12

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.26	0.0	7.26	0.0	0.0	0.0
6	10.64	0.0	10.64	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	33.88	33.88
8	12.51	0.0	12.51	0.0	0.0	0.0
9	12.95	0.0	12.95	0.0	28.07	28.07
10	13.26	0.0	13.26	0.0	0.0	0.0
11	13.56	0.0	13.56	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.48	0.0	14.48	0.0	0.0	0.0
15	14.81	0.0	14.81	0.0	0.0	0.0
16	15.15	0.0	15.15	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

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VOL CLASS 13 (BALSAM FIR 8/4 REGENERATES AS WS)
CLASS NUMBER 13

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	7.38	0.0	7.38	0.0	0.0	0.0
6	10.84	0.0	10.84	0.0	0.0	0.0
7	11.83	0.0	11.83	0.0	28.07	0.0
8	13.81	0.0	13.81	0.0	0.0	0.0
9	13.95	0.0	13.95	0.0	28.07	0.0
10	13.25	0.0	13.25	0.0	0.0	0.0
11	13.84	0.0	13.84	0.0	0.0	0.0
12	13.87	0.0	13.87	0.0	0.0	0.0
13	14.18	0.0	14.18	0.0	0.0	0.0
14	14.46	0.0	14.46	0.0	0.0	0.0
15	14.87	0.0	14.81	0.0	0.0	0.0
16	15.16	0.0	15.16	0.0	0.0	0.0
17	15.53	0.0	15.53	0.0	0.0	0.0
18	15.92	0.0	15.92	0.0	0.0	0.0

VOL CLASS 14 (BLACK SPRUCE - PINE 8/4)
CLASS NUMBER 14

NORMAL ROTATION AGE - 11

IMPROVED ROTATION AGE - 11

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	4.31	0.0	4.31	0.0	0.0	0.0
7	7.06	0.0	7.06	0.0	0.0	0.0
8	8.04	0.0	8.04	0.0	0.0	0.0
9	10.07	0.0	10.07	0.0	13.79	14.45
10	11.81	0.0	11.81	0.0	0.0	0.0
11	12.86	0.0	12.86	0.0	14.45	14.45
12	13.78	0.0	13.78	0.0	0.0	0.0
13	14.34	0.0	14.34	0.0	0.0	0.0
14	15.30	0.0	15.30	0.0	0.0	0.0
15	15.84	0.0	15.84	0.0	0.0	0.0
16	16.54	0.0	16.54	0.0	0.0	0.0
17	17.09	0.0	17.09	0.0	0.0	0.0
18	17.80	0.0	17.80	0.0	0.0	0.0

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VOL CLASS 15 (SW-PL 6/4)
CLASS NUMBER 15

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	5.15	0.0	5.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	18.08	21.02
7	13.81	0.0	13.81	0.0	0.0	0.0
8	16.86	0.0	16.86	0.0	21.02	21.02
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.80	0.0	19.80	0.0	0.0	0.0
12	20.65	0.0	20.65	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 15 (WS 6/4)
CLASS NUMBER 15

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.81	0.0	4.81	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	15.73	18.87
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.08	0.0	9.08	0.0	18.88	18.88
9	9.76	0.0	9.76	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.78	0.0	10.78	0.0	0.0	0.0
12	11.16	0.0	11.16	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

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VOL CLASS 17 (MS 6/4)
CLASS NUMBER 17

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	18.58	0.0
7	8.21	0.0	8.21	0.0	0.0	0.0
8	9.08	0.0	9.08	0.0	18.58	0.0
9	9.75	0.0	9.75	0.0	0.0	0.0
10	10.30	0.0	10.30	0.0	0.0	0.0
11	10.78	0.0	10.78	0.0	0.0	0.0
12	11.18	0.0	11.18	0.0	0.0	0.0
13	11.52	0.0	11.52	0.0	0.0	0.0
14	11.83	0.0	11.83	0.0	0.0	0.0
15	12.12	0.0	12.12	0.0	0.0	0.0
16	12.38	0.0	12.38	0.0	0.0	0.0
17	12.62	0.0	12.62	0.0	0.0	0.0
18	12.84	0.0	12.84	0.0	0.0	0.0

VOL CLASS 18 (SN - AW II 6/4)
CLASS NUMBER 18

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	14.30	14.30
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.75	0.0	14.75	0.0	15.72	16.87
9	17.80	0.0	17.80	0.0	0.0	0.0
10	18.85	0.0	18.85	0.0	0.0	0.0
11	19.55	0.0	19.55	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.95	0.0	19.95	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

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VOL CLASS 19 (SH 6/4)
CLASS NUMBER 19

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	18.72	18.87
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.89	0.0	14.89	0.0	18.98	18.98
9	15.88	0.0	15.88	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

VOL CLASS 20 (SH 6/4)
CLASS NUMBER 20

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	18.72	0.0
7	13.30	0.0	13.30	0.0	0.0	0.0
8	14.89	0.0	14.89	0.0	18.98	0.0
9	15.88	0.0	15.88	0.0	0.0	0.0
10	16.11	0.0	16.11	0.0	0.0	0.0
11	16.29	0.0	16.29	0.0	0.0	0.0
12	16.19	0.0	16.19	0.0	0.0	0.0
13	15.88	0.0	15.88	0.0	0.0	0.0
14	15.32	0.0	15.32	0.0	0.0	0.0
15	14.60	0.0	14.60	0.0	0.0	0.0
16	13.74	0.0	13.74	0.0	0.0	0.0
17	12.73	0.0	12.73	0.0	0.0	0.0
18	11.61	0.0	11.61	0.0	0.0	0.0

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VOL CLASS 21 (SPACED PINE 6/4)
CLASS NUMBER 21

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.86	0.0	8.86	0.0	0.0	0.0
6	12.31	0.0	12.31	0.0	0.0	0.0
7	15.19	0.0	15.19	0.0	21.88	23.78
8	17.55	0.0	17.55	0.0	0.0	0.0
9	19.47	0.0	19.47	0.0	23.78	23.78
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.18	0.0	24.18	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.78	0.0	27.78	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.78	0.0	30.78	0.0	0.0	0.0

VOL CLASS 22 (SPACED PINE 6/4)
CLASS NUMBER 22

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.71	0.0	8.71	0.0	0.0	0.0
6	12.67	0.0	12.67	0.0	21.88	23.78
7	15.38	0.0	15.38	0.0	0.0	0.0
8	17.86	0.0	17.86	0.0	23.78	23.78
9	19.47	0.0	19.47	0.0	0.0	0.0
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.18	0.0	24.18	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.78	0.0	27.78	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.78	0.0	30.78	0.0	0.0	0.0

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VOL CLASS 23 (PINE 8/4)
CLASS NUMBER 23

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	16.29	20.12
9	16.03	0.0	16.03	0.0	20.12	21.58
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	26.38	0.0	26.38	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

VOL CLASS 24 (PINE 8/4)
CLASS NUMBER 24

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.48	0.0	8.48	0.0	0.0	0.0
6	11.43	0.0	11.43	0.0	0.0	0.0
7	13.84	0.0	13.84	0.0	0.0	0.0
8	16.11	0.0	16.11	0.0	21.88	23.78
9	16.03	0.0	16.03	0.0	23.78	23.78
10	19.75	0.0	19.75	0.0	0.0	0.0
11	21.30	0.0	21.30	0.0	0.0	0.0
12	22.72	0.0	22.72	0.0	0.0	0.0
13	24.02	0.0	24.02	0.0	0.0	0.0
14	25.23	0.0	25.23	0.0	0.0	0.0
15	26.35	0.0	26.35	0.0	0.0	0.0
16	27.41	0.0	27.41	0.0	0.0	0.0
17	26.38	0.0	26.38	0.0	0.0	0.0
18	29.32	0.0	29.32	0.0	0.0	0.0

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YDL CLASS 25 (SPACED PINE 6/4)
CLASS NUMBER 25

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.86	0.0	8.86	0.0	0.0	0.0
6	12.31	0.0	12.31	0.0	0.0	0.0
7	15.18	0.0	15.18	0.0	0.0	0.0
8	17.55	0.0	17.55	0.0	21.54	23.76
9	19.47	0.0	19.47	0.0	23.76	23.76
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.16	0.0	24.16	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.79	0.0	27.79	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.76	0.0	30.76	0.0	0.0	0.0

YDL CLASS 25 (SPACED PINE 6/4)
CLASS NUMBER 25

NORMAL ROTATION AGE - 9

IMPROVED ROTATION AGE - 9

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.71	0.0	8.71	0.0	0.0	0.0
6	12.67	0.0	12.67	0.0	0.0	0.0
7	15.38	0.0	15.38	0.0	0.0	0.0
8	17.55	0.0	17.55	0.0	21.54	23.76
9	19.47	0.0	19.47	0.0	23.76	23.76
10	21.19	0.0	21.19	0.0	0.0	0.0
11	22.74	0.0	22.74	0.0	0.0	0.0
12	24.16	0.0	24.16	0.0	0.0	0.0
13	25.46	0.0	25.46	0.0	0.0	0.0
14	26.67	0.0	26.67	0.0	0.0	0.0
15	27.79	0.0	27.79	0.0	0.0	0.0
16	28.85	0.0	28.85	0.0	0.0	0.0
17	29.83	0.0	29.83	0.0	0.0	0.0
18	30.76	0.0	30.76	0.0	0.0	0.0

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VOL CLASS 27 (SW-PL 6/4)
CLASS NUMBER 27

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	6.15	0.0	6.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.81	0.0	13.81	0.0	18.17	17.78
8	15.85	0.0	15.85	0.0	17.78	18.04
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.80	0.0	19.80	0.0	0.0	0.0
12	20.65	0.0	20.65	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

VOL CLASS 28 (SW-PL 6/4)
CLASS NUMBER 28

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	6.15	0.0	6.15	0.0	0.0	0.0
6	11.05	0.0	11.05	0.0	0.0	0.0
7	13.81	0.0	13.81	0.0	19.04	21.02
8	15.85	0.0	15.85	0.0	21.02	21.02
9	17.52	0.0	17.52	0.0	0.0	0.0
10	18.81	0.0	18.81	0.0	0.0	0.0
11	19.80	0.0	19.80	0.0	0.0	0.0
12	20.65	0.0	20.65	0.0	0.0	0.0
13	21.68	0.0	21.68	0.0	0.0	0.0
14	22.42	0.0	22.42	0.0	0.0	0.0
15	23.10	0.0	23.10	0.0	0.0	0.0
16	23.71	0.0	23.71	0.0	0.0	0.0
17	24.28	0.0	24.28	0.0	0.0	0.0
18	24.80	0.0	24.80	0.0	0.0	0.0

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VDL CLASS 29 (SH-AW II 6/4)
CLASS NUMBER 29

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	18.72	18.87
7	13.30	0.0	13.30	0.0	0.0	0.0
8	15.75	0.0	15.75	0.0	18.56	18.56
9	17.80	0.0	17.80	0.0	0.0	0.0
10	18.86	0.0	18.86	0.0	0.0	0.0
11	19.56	0.0	19.56	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.56	0.0	19.56	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

VDL CLASS 30 (SH-AW II 6/4)
CLASS NUMBER 30

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.34	0.0	11.34	0.0	18.88	0.0
7	13.30	0.0	13.30	0.0	0.0	0.0
8	15.75	0.0	15.75	0.0	18.56	0.0
9	17.80	0.0	17.80	0.0	0.0	0.0
10	18.86	0.0	18.86	0.0	0.0	0.0
11	19.56	0.0	19.56	0.0	0.0	0.0
12	19.80	0.0	19.80	0.0	0.0	0.0
13	19.56	0.0	19.56	0.0	0.0	0.0
14	18.90	0.0	18.90	0.0	0.0	0.0
15	17.85	0.0	17.85	0.0	0.0	0.0
16	16.44	0.0	16.44	0.0	0.0	0.0
17	14.69	0.0	14.69	0.0	0.0	0.0
18	12.61	0.0	12.61	0.0	0.0	0.0

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VDL CLASS 31 (SH-AW I 8/6)
CLASS NUMBER 31

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.87	0.0	11.87	0.0	15.72	15.87
7	14.83	0.0	14.83	0.0	0.0	0.0
8	17.28	0.0	17.28	0.0	15.86	15.86
9	19.14	0.0	19.14	0.0	0.0	0.0
10	20.40	0.0	20.40	0.0	0.0	0.0
11	21.11	0.0	21.11	0.0	0.0	0.0
12	21.32	0.0	21.32	0.0	0.0	0.0
13	21.06	0.0	21.06	0.0	0.0	0.0
14	20.42	0.0	20.42	0.0	0.0	0.0
15	19.37	0.0	19.37	0.0	0.0	0.0
16	17.98	0.0	17.98	0.0	0.0	0.0
17	16.20	0.0	16.20	0.0	0.0	0.0
18	14.13	0.0	14.13	0.0	0.0	0.0

VDL CLASS 32 (SH-AW I 8/6)
CLASS NUMBER 32

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN
VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	8.83	0.0	8.83	0.0	0.0	0.0
6	11.87	0.0	11.87	0.0	15.86	0.0
7	14.83	0.0	14.83	0.0	0.0	0.0
8	17.28	0.0	17.28	0.0	15.86	0.0
9	19.14	0.0	19.14	0.0	0.0	0.0
10	20.40	0.0	20.40	0.0	0.0	0.0
11	21.11	0.0	21.11	0.0	0.0	0.0
12	21.32	0.0	21.32	0.0	0.0	0.0
13	21.06	0.0	21.06	0.0	0.0	0.0
14	20.42	0.0	20.42	0.0	0.0	0.0
15	19.37	0.0	19.37	0.0	0.0	0.0
16	17.98	0.0	17.98	0.0	0.0	0.0
17	16.20	0.0	16.20	0.0	0.0	0.0
18	14.13	0.0	14.13	0.0	0.0	0.0

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VOL CLASS 33 (MS-AW II 6/4)
CLASS NUMBER 33

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	14.30	14.30
7	8.21	0.0	8.21	0.0	0.0	0.0
8	10.32	0.0	10.32	0.0	15.72	15.87
9	11.71	0.0	11.71	0.0	0.0	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.81	0.0	12.81	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.86	0.0	11.86	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

VOL CLASS 34 (MS-AW II 6/4)
CLASS NUMBER 34

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

AGE IN DECADES	STANDING TIMBER: INTENSIVE MANAGEMENT: ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: RE-ENTRY CUTS	STANDING TIMBER: INTENSIVE MANAGEMENT: HARVEST CUTS	STANDING TIMBER: NON-INTENSIVE HARVEST CUTS	REGENERATED TIMBER: SUSTAINED YIELD: NORMAL CUTS	REGENERATED TIMBER: SUSTAINED YIELD: IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.89	0.0	8.89	0.0	15.72	15.87
7	8.21	0.0	8.21	0.0	0.0	0.0
8	10.32	0.0	10.32	0.0	15.84	15.84
9	11.71	0.0	11.71	0.0	0.0	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.81	0.0	12.81	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.86	0.0	11.86	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

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VOL CLASS 35 (NS-AW II 6/4)
CLASS NUMBER 36

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	8.98	0.0	8.98	0.0	18.58	0.0
7	8.21	0.0	8.21	0.0	0.0	0.0
8	10.32	0.0	10.32	0.0	18.58	0.0
9	11.71	0.0	11.71	0.0	0.0	0.0
10	12.43	0.0	12.43	0.0	0.0	0.0
11	12.61	0.0	12.61	0.0	0.0	0.0
12	12.31	0.0	12.31	0.0	0.0	0.0
13	11.55	0.0	11.55	0.0	0.0	0.0
14	10.37	0.0	10.37	0.0	0.0	0.0
15	8.80	0.0	8.80	0.0	0.0	0.0
16	6.85	0.0	6.85	0.0	0.0	0.0
17	5.13	0.0	5.13	0.0	0.0	0.0
18	5.13	0.0	5.13	0.0	0.0	0.0

VOL CLASS 38 (NS-AW I 6/4)
CLASS NUMBER 38

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 8

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE HARVEST CUTS	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS		NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	11.73	0.0	11.73	0.0	15.72	16.87
7	14.94	0.0	14.94	0.0	0.0	0.0
8	17.07	0.0	17.07	0.0	18.58	18.58
9	18.44	0.0	18.44	0.0	0.0	0.0
10	19.17	0.0	19.17	0.0	0.0	0.0
11	19.35	0.0	19.35	0.0	0.0	0.0
12	19.05	0.0	19.05	0.0	0.0	0.0
13	18.30	0.0	18.30	0.0	0.0	0.0
14	17.12	0.0	17.12	0.0	0.0	0.0
15	15.54	0.0	15.54	0.0	0.0	0.0
16	13.59	0.0	13.59	0.0	0.0	0.0
17	11.88	0.0	11.88	0.0	0.0	0.0
18	11.88	0.0	11.88	0.0	0.0	0.0

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VDL CLASS 37 (HS-AW I 6/4)
CLASS NUMBER 37

NORMAL ROTATION AGE - 8

IMPROVED ROTATION AGE - 0

MINIMUM CUT USED IN VOLUME REGULATION - 0.0

VOLUME

	STANDING TIMBER				REGENERATED TIMBER	
	INTENSIVE MANAGEMENT			NON-INTENSIVE	SUSTAINED YIELD	
AGE IN DECADES	ENTRY CUTS	RE-ENTRY CUTS	HARVEST CUTS	HARVEST CUTS	NORMAL CUTS	IMPROVED CUTS
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	4.91	0.0	4.91	0.0	0.0	0.0
6	11.73	0.0	11.73	0.0	18.58	0.0
7	14.94	0.0	14.94	0.0	0.0	0.0
8	17.07	0.0	17.07	0.0	18.58	0.0
9	18.44	0.0	18.44	0.0	0.0	0.0
10	18.17	0.0	18.17	0.0	0.0	0.0
11	18.38	0.0	18.38	0.0	0.0	0.0
12	18.08	0.0	18.08	0.0	0.0	0.0
13	18.30	0.0	18.30	0.0	0.0	0.0
14	17.12	0.0	17.12	0.0	0.0	0.0
15	15.54	0.0	15.54	0.0	0.0	0.0
16	13.59	0.0	13.59	0.0	0.0	0.0
17	11.88	0.0	11.88	0.0	0.0	0.0
18	11.88	0.0	11.88	0.0	0.0	0.0

GENERATION COMPLETE
NORMAL PROGRAM END

END OF INPUT DATA
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DATA INPUT

1. TIMBER RAM PLAN TITLE

NCFI TIMBER RAM ANALYSIS
****

2. OBJECTIVE FUNCTION = TVL03

3. INPUT DATA SOURCES
REPORT TAPE=3 LP SOLUTION TAPE=2

***** REPORT TAPE *****

CANFOR TIMBER RAM ANALYSIS, RUN N30C, COMBINED IM.,FIR REG WS
ALT. C. CUT, REGEN=5.2 YR LAG,4% CULL,NORMAL STOCKING, NOV. 28,1982.

GENERATED BY TIMBRAM MATRIX GN PRINT OUT DATA AND GENERATE

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4. OUTPUT CONTROL CARD

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5. NUMBER OF PERIODS SPANNED BY EACH DOCUMENT

	LAST PERIOD OF OUTPUT
TIMBER HARVEST SCHEDULE	24
PROBLEM SCHEDULE	-1
HARVEST REPORT	24
ECONOMIC REPORT	-1
HARVEST GRAPH	24

NCFI TIMBER RAM ANALYSIS
****

OBJECTIVE: TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 10

TIMBER HARVEST SCHEDULE
PERIODS 1 - 10

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	1	2	3	4	5	6	7	8	9	10
A13.I. 3. 5			23.38		35.15*					
886.000			(26.38)		(39.39)					
A11.I. 3. 5			29.04		31.86*					
1208.000			(24.02)		(26.35)					
A09.I. 3. 5			64.72		81.71*					
2868.000			(21.38)		(24.02)					
A07.I. 3. 5			15.91		18.89*					
882.529			(18.03)		(21.39)					
A07.I. 4. 5				243.10		278.51*				
12258.469				(19.75)		(22.72)				
A05.I. 5. 7					214.58		253.47*			
11889.988					(18.03)		(21.30)			
A03.D. 5. 7					67.72		112.44*			
5774.996					(18.19)		(19.47)			
A01.D. 7. 5							34.07		43.13*	
2215.000							(15.38)		(19.47)	
P13.C. 3. 3		29.28	20.58*							
1180.472		(25.23)	(29.38)							
P13.I. 3. 4			4.67	4.85*						
169.626			(26.38)	(27.41)						
P11.I. 3. 5			43.87		47.80*					
1814.000			(24.02)		(26.35)					
P09.I. 3. 5			82.08		92.57*					
3854.000			(21.30)		(24.02)					
P07.I. 4. 5				323.77	348.18*					
16393.340				(19.75)	(21.30)					
P07.I. 5. 6					70.67	78.38*				

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3317.858					(21.30)	(22.72)								
P05,I, 5, 6					321.84	352.54*								
17850.004					(18.03)	(19.75)								
P03,D, 5, 6					15.63	17.98*								
1022.877					(15.19)	(17.55)								
P03,D, 6, 7						134.07	148.74*							
7839.320						(17.55)	(19.47)							
P01,D, 7, 8							51.11	56.32*						
3323.000							(15.38)	(17.55)						
B13,G, 1, 3	200.43		203.78*										187.47	
9848.998	(20.35)		(20.69)										(20.05)	
B11,G, 1, 3	175.27		184.90*										162.17	
9086.020	(19.29)		(20.35)										(20.05)	
B11,G, 2, 4		43.78		45.26*										
2196.977		(19.93)		(20.60)										
B09,I, 3, 5			177.14		186.87*									
9182.998			(19.29)		(20.35)									
B07,I, 3, 5			78.20		85.51*									
4432.998			(17.19)		(19.29)									
B05,I, 4, 6				39.75		46.98*								
2552.000				(15.58)		(18.40)								
B03,I, 5, 7					33.20		42.49*							
2472.000					(13.43)		(17.19)							
B01,I, 7, 8							2.30	2.84*						
171.000							(13.43)	(17.19)						
C13,G, 1, 3	126.39		134.28*										181.78	
8867.000	(14.15)		(14.81)										(20.05)	
C11,G, 1, 3	59.51		62.05*										87.86	
4361.998	(13.56)		(14.15)										(20.05)	
C09,G, 1, 3	23.12		24.24*										35.79	
1785.000	(12.95)		(13.58)										(20.05)	
C07,G, 1, 3	59.67		65.32*										101.13	
5043.998	(11.83)		(12.95)										(20.05)	
C05,I, 3, 5			11.25		12.32*									
951.000			(11.83)		(12.95)									
C03,I, 5, 7					3.80		3.83*							
286.000					(11.83)		(12.95)							
D13,G, 2, 4		159.67		172.83*										
10448.000		(15.30)		(16.54)										
D11,G, 2, 4		103.17		114.55*										
7487.000		(13.78)		(15.30)										
D09,G, 2, 4		161.83		186.83*										
13703.000		(11.81)		(13.78)										
D07,I, 5, 7					178.61		202.27*							
13872.000					(12.88)		(14.58)							
D05,I, 5, 7					162.88		197.90*							
15388.998					(10.57)		(12.86)							
D03,I, 6, 8						221.87		288.88*						
24842.802						(9.04)		(11.81)						
D03,I, 7, 9							26.27		31.86*					
2488.398							(10.57)		(12.86)					
D01,I, 7, 9							27.59		41.19*					
3887.000							(7.08)		(10.87)					
E13,G, 2, 4		173.49		183.47*									137.68	
7737.998		(22.42)		(23.71)									(17.79)	
E11,G, 2, 4		116.89		125.69*									98.73	
5805.998		(20.65)		(22.42)									(17.79)	
E09,G, 2, 4		140.27		155.48*									132.66	
7456.998		(18.81)		(20.85)									(17.79)	
E07,G, 2, 4		112.86		132.74*									126.54	
7057.000		(15.95)		(18.81)									(17.79)	
E05,I, 5, 7					77.75		88.32*							
4437.998					(17.52)		(19.90)							
E03,I, 5, 7					67.08		84.48*							
4819.998					(13.91)		(17.52)							
E01,I, 7, 9							97.82		133.20*					
7031.998							(13.91)		(17.52)					
O13,G, 1, 2	251.84	280.23*							187.69	206.48*				
11607.000	(21.68)	(22.42)							(16.17)	(17.79)				
O11,G, 1, 2	167.34	175.33*							135.97	149.60*				
8409.000	(19.90)	(20.85)							(16.17)	(17.79)				
O09,G, 1, 2	195.88	210.41*							180.88	189.00*				
11186.998	(17.52)	(18.81)							(16.17)	(17.79)				
O07,G, 1, 2	82.48	71.66*							72.65	79.93*				
4492.703	(13.91)	(15.95)							(16.17)	(17.79)				
O07,G, 2, 3		81.70	89.74*										81.13	
5121.983		(15.95)	(17.52)										(17.79)	
O07,I, 5, 7					19.31		21.04*							
970.339					(19.90)		(21.68)							
O05,I, 7, 8							132.47	138.80*						

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8656.886							(18.50)	(20.86)		
003,I, 7, 8 7230.986							126.69 (17.52)	136.02* (18.81)		
001,I, 7, 8 10546.986							148.71 (13.81)	168.22* (15.95)		
F13,C, 1, 3 20057.986	318.12 (15.86)	292.85* (14.60)							286.83 (14.30)	
F11,C, 1, 3 25410.992	413.94 (16.29)	403.02* (15.86)							363.38 (14.30)	
F09,C, 1, 3 12415.486	193.58 (15.60)	202.25* (16.29)							177.54 (14.30)	
F08,C, 2, 4 21013.804	338.53 (16.11)	340.21* (16.18)								300.49 (14.30)
F07,C, 2, 4 21708.886	341.92 (15.75)	409.43* (18.86)								310.64 (14.30)
F05,N, 5, 7 8680.000			181.08 (15.14)		199.70* (21.11)					
F03,N, 5, 7 1557.644			22.86 (14.74)		30.48* (19.57)					
F03,N, 8, 8 18384.148				320.82 (17.47)		386.22* (21.14)				
F01,N, 7, 8 17707.982					281.02 (14.74)				346.56* (19.57)	
G13,C, 1, 3 10585.000	121.94 (11.52)	128.28* (12.12)							151.37 (14.30)	
G11,C, 1, 3 12227.986	131.57 (10.76)	140.87* (11.52)							174.86 (14.30)	
G09,C, 1, 3 22984.986	223.91 (9.75)	247.10* (10.76)							328.40 (14.30)	
G07,C, 2, 4 19870.992	208.10 (10.32)	248.24* (12.43)								285.58 (14.30)
G05,N, 5, 7 19466.992			369.01 (18.44)		378.73* (19.35)					
G03,N, 8, 8 73205.936				1278.91 (17.47)		1547.57* (21.14)				
G01,N, 7, 8 4010.000					59.11 (14.74)				78.48* (19.57)	
OVERSTORY REMOVAL CUTS ACRES M CUNITS	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

INTERMEDIATE CUTS ACRES M CUNITS	178869.86 2727.00	130869.78 2009.37	25951.04 517.74	31203.81 606.63	112610.25 1815.23	123762.00 1955.67	85276.37 985.14	0.0 0.0	139367.00 2089.56	134686.25 2269.45
HARVEST CUTS ACRES M CUNITS	0.0 0.0	35694.70 717.62	149157.63 2209.26	124686.81 2121.36	42174.85 811.77	37000.80 771.33	98089.31 1761.86	143870.63 2727.00	37518.38 887.44	35894.70 635.01
TOTAL CUTS ACRES M CUNITS	178869.86 2727.00	166384.44 2727.00	175106.63 2727.00	155760.58 2727.00	154785.06 2727.00	160762.75 2727.00	183335.63 2727.00	143870.63 2727.00	176875.38 2727.00	170580.94 2904.46

* = OVERSTORY REMOVAL CUT; + = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 10

TIMBER HARVEST SCHEDULE
PERIODS 11 - 20

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS (VOLUME CUT / ACRE - CUNITS/AC)									
	11	12	13	14	15	16	17	18	19	20
A13,I, 3, 5 888.000		19.12 (21.55)		21.07* (23.76)						
A11,I, 3, 5 1208.000		26.08 (21.55)		28.75* (23.76)						
A09,I, 3, 5 2868.000		59.44 (21.55)		61.08* (23.76)						
A07,I, 3, 5 882.529		19.04 (21.55)		20.89* (23.76)						
A07,I, 4, 5 12258.488			291.51 (23.76)		291.51* (23.76)					
A05,I, 5, 7 11889.888				282.98 (23.76)		282.98* (23.76)				
A03,D, 5, 7 5774.888				137.33 (23.76)		137.33* (23.76)				
A01,D, 7, 8 2215.000						52.67 (23.76)		52.67* (23.76)		
P13,G, 2, 3 1180.472	33.35 (30.12)	25.04* (21.55)								23.35 (20.12)
P13,I, 3, 4 189.528		3.66 (21.55)	4.03* (23.76)							
P11,I, 3, 5 1814.000			43.14 (23.76)	43.14* (23.76)						
P09,I, 3, 5 3864.000			91.85 (23.76)	91.85* (23.76)						
P07,I, 4, 5 16393.340			388.63 (23.76)	388.63* (23.76)						
P07,I, 5, 8				78.89	78.89*					
3317.656				(23.76)	(23.76)					
P05,I, 5, 5 17850.004				424.47 (23.76)	424.47* (23.76)					
P03,D, 5, 8 1022.677				24.32 (23.76)	24.32* (23.76)					
P03,D, 6, 7 7638.320					181.65 (23.76)	181.65* (23.76)				
P01,D, 7, 8 3323.000						78.02 (23.76)	78.02* (23.76)			
B13,G, 1, 3 9848.898		233.03* (23.66)							187.47 (20.05)	
B11,G, 1, 3 9088.820		214.98* (23.66)							182.17 (20.05)	
B11,G, 2, 4 2196.977	44.05 (20.05)		67.28* (28.07)							44.05 (20.05)
B09,I, 3, 5 9182.898		202.68 (22.06)		239.40* (26.07)						
B07,I, 3, 5 4432.898		97.79 (22.06)		115.57* (26.07)						
B05,I, 4, 6 2562.000			60.38 (23.66)		66.83* (26.07)					
B03,I, 5, 7 2472.000				64.45 (26.07)		64.45* (26.07)				
B01,I, 7, 8 171.000						4.46 (26.07)		4.46* (26.07)		
C13,G, 1, 3 9067.000		214.53* (23.66)							181.79 (20.05)	
C11,G, 1, 3 4381.898		103.68* (23.66)							87.86 (20.05)	
C09,G, 1, 3 1785.000		42.23* (23.66)							35.79 (20.05)	
C07,G, 1, 3 5043.898		119.34* (23.66)							101.13 (20.05)	
C05,I, 3, 5 951.000		20.98 (22.06)		24.79* (26.07)						
C03,I, 5, 7 296.000				7.00 (23.66)		7.72* (26.07)				
B13,G, 2, 4 10448.000			137.82 (13.19)		150.99* (14.45)					
B11,G, 2, 4			98.76		108.19*					

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7487.000			(13.19)		(14.45)					
D09,C, 2, 4 13703.000			180.74 (13.19)		188.01* (14.45)					
D07,I, 5, 7 13873.000						200.46 (14.45)		200.46* (14.45)		
D05,I, 5, 7 15384.996						222.37 (14.45)		222.37* (14.45)		
D03,I, 5, 8 24842.602							323.72 (13.19)		354.84* (14.45)	
D03,I, 7, 9 2466.396								32.78 (13.19)		35.91* (14.45)
D01,I, 7, 9 3897.000								86.31 (14.45)		86.31* (14.45)
E13,C, 2, 4 7737.996		162.65* (21.02)						137.66 (17.79)		162.65* (21.02)
E11,C, 2, 4 5505.996		117.84* (21.02)						99.73 (17.79)		117.84* (21.02)
E09,C, 2, 4 7486.996		158.75* (21.02)						132.66 (17.79)		158.75* (21.02)
E07,C, 2, 4 7057.000		148.34* (21.02)						125.56 (17.79)		148.34* (21.02)
E05,I, 5, 7 4437.996			93.29 (21.02)		93.29* (21.02)					
E03,I, 5, 7 4819.996			85.75 (17.79)		101.32* (21.02)					
E01,I, 7, 9 7031.996					147.81 (21.02)		147.81* (21.02)			
013,C, 1, 2 11607.000							206.49 (17.79)	231.48* (19.06)		
011,C, 1, 2 8409.000							149.60 (17.79)	180.44* (19.06)		
009,C, 1, 2 11185.996							198.00 (17.79)	213.43* (19.06)		
007,C, 1, 2 4492.703							79.83 (17.79)	85.72* (19.06)		
007,C, 2, 3 5121.953	97.73* (19.06)							81.12 (17.79)	97.73* (19.06)	
007,I, 5, 7 970.339				20.40 (21.02)	20.40* (21.02)					
005,I, 7, 8					139.83	139.83*				

6858.996					(21.02)	(21.02)				
003,I, 7, 8 7230.996					152.00 (21.02)	152.00* (21.02)				
001,I, 7, 8 10546.996					221.70 (21.02)	221.70* (21.02)				
F13,C, 1, 3 20057.996	315.31* (15.72)						286.83 (14.30)		336.38* (16.87)	
F11,C, 1, 3 25410.992	399.48* (15.72)						363.38 (14.30)		428.68* (16.87)	
F09,C, 1, 3 12416.488	195.17* (15.72)						177.54 (14.30)		209.45* (16.87)	
F09,C, 2, 4 21013.504		384.50* (16.87)						300.48 (14.30)		354.50* (16.87)
F07,C, 2, 4 21706.996		366.23* (16.87)						310.44 (14.30)		366.23* (16.87)
F05,N, 5, 7 9460.000			175.77 (16.58)		175.77* (16.58)					
F03,N, 5, 7 1557.844			28.94 (16.58)		28.94* (16.58)					
F03,N, 6, 8 18384.148				341.21 (16.58)		341.21* (16.58)				
F01,N, 7, 9 17707.992					329.01 (16.58)		329.01* (16.58)			
G13,C, 1, 3 10585.000	188.40* (15.72)						161.37 (14.30)		176.57* (16.87)	
G11,C, 1, 3 12227.996	192.22* (15.72)						174.86 (14.30)		206.29* (16.87)	
G09,C, 1, 3 22964.996	361.01* (15.72)						328.40 (14.30)		387.42* (16.87)	
G07,C, 2, 4 19970.992		336.91* (16.87)						285.58 (14.30)		336.91* (16.87)
G05,N, 5, 7 18468.992			361.73 (16.58)		361.73* (16.58)					
G03,N, 6, 8 73205.938				1360.17 (16.58)		1360.17* (16.58)				
G01,N, 7, 9 4010.000					74.51 (16.58)		76.51* (16.58)			
OVERSTORY REMOVAL CUTS ACRES M CUNITS	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0

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INTERMEDIATE CUTS											
ACRES	3357.45	30283.04	108358.38	138173.75	80824.30	34970.88	163889.50	102085.75	39213.00	3357.45	
M CUNITS	87.40	444.70	2038.30	2741.21	1248.62	558.98	2441.10	1572.32	786.22	87.40	
HARVEST CUTS											
ACRES	108784.31	130824.81	2386.50	42174.85	109394.88	144067.38	32072.98	67342.88	133326.81	98823.81	
M CUNITS	1727.30	2586.04	61.31	1038.28	2124.35	2888.13	830.35	1181.02	2201.15	1735.44	
TOTAL CUTS											
ACRES	112141.75	161207.81	110821.88	177348.59	170178.94	178058.31	195872.44	169398.44	172539.81	100291.25	
M CUNITS	1794.70	3040.74	2100.61	3777.49	3370.97	3446.12	3071.45	2753.34	2987.37	1802.84	

* = OVERSTORY REMOVAL CUT; + = HARVEST CUT

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 10

TIMBER HARVEST SCHEDULE
PERIODS 21 - 30

ACTIVITY NAME / ACRES CUT	TOTAL VOLUME CUT - M CUNITS / VOLUME CUT / ACRE - CUNITS/AC									
	21	22	23	24	25	26	27	28	29	30
A13,I, 3, 5	21.07		21.07*							
886.000	(23.78)		(23.78)							
A11,I, 3, 5	28.75		28.75*							
1209.000	(23.78)		(23.78)							
A09,I, 3, 5	61.09		61.09*							
2569.000	(23.78)		(23.78)							
A07,I, 3, 5	20.99		20.99*							
882.529	(23.78)		(23.78)							
A07,I, 4, 5		291.51		291.51*						
12258.469		(23.78)		(23.78)						
A05,I, 5, 7			262.95							
11899.986			(23.78)							
A03,D, 5, 7			137.33							
5774.986			(23.78)							
A01,D, 7, 9										
2215.000										
P13,C, 2, 3	25.04*									
1180.472	(21.58)									
P13,I, 3, 4	4.03	4.03*								
169.528	(23.78)	(23.78)								
P11,I, 3, 5		43.14	43.14*							
1814.000		(23.78)	(23.78)							
P09,I, 3, 5		91.85	91.85*							
3864.000		(23.78)	(23.78)							
P07,I, 4, 5		389.83	389.83*							
16393.340		(23.78)	(23.78)							
P07,I, 5, 6			78.89	78.89*						

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3317.855			(23.76)	(23.76)
P05,I, 5, 5			424.47	424.47*
17880.004			(23.76)	(23.76)
P03,D, 5, 6			24.32	24.32*
1022.677			(23.76)	(23.76)
P03,D, 6, 7				181.68
7639.320				(23.76)
P01,D, 7, 8				
3323.000				
B13,G, 1, 3	256.76*			
9846.996	(26.07)			
B11,G, 1, 3	238.87*			
9086.020	(26.07)			
B11,G, 2, 4		57.28*		
2196.977		(26.07)		
B09,I, 3, 5	217.27		339.40*	
8182.996	(23.66)		(26.07)	
B07,I, 3, 5	104.88		118.57*	
4432.996	(23.66)		(26.07)	
B05,I, 4, 5		60.38		66.53*
2552.000		(23.66)		(26.07)
B03,T, 5, 7			64.45	
2472.000			(26.07)	
B01,T, 7, 9				
171.000				
C13,G, 1, 3	238.38*			
9087.000	(26.07)			
C11,G, 1, 3	114.24*			
4381.996	(26.07)			
C09,G, 1, 3	46.53*			
1785.000	(26.07)			
C07,G, 1, 3	131.50*			
5043.996	(26.07)			
C05,I, 3, 5	22.50		24.79*	
951.000	(23.66)		(26.07)	
C03,I, 5, 7			7.00	
296.000			(23.66)	
D13,G, 2, 4				137.82
10449.000				(13.19)
D11,G, 2, 4				98.75
7487.000				(13.19)
D09,G, 2, 4				180.74
13703.000				(13.19)
D07,I, 5, 7				
13873.000				
D05,I, 5, 7				
19388.996				
D03,I, 6, 8				
24542.602				
D03,I, 7, 9				
2485.398				
D01,I, 7, 9				
3887.000				
E13,G, 2, 4				
7737.996				
E11,G, 2, 4				
5805.996				
E09,G, 2, 4				
7456.996				
E07,G, 2, 4				
7057.000				
E05,I, 5, 7	83.29		83.29*	
4437.996	(21.02)		(21.02)	
E03,I, 5, 7	65.75		101.32*	
4819.996	(17.79)		(21.02)	
E01,I, 7, 9			147.81	
7031.996			(21.02)	
G13,G, 1, 2				
11807.000				
G11,G, 1, 2				
8408.000				
G09,G, 1, 2				
11185.996				
G07,G, 1, 2				
4482.703				
G07,G, 2, 3				
8121.853				
G07,I, 5, 7		20.40	20.40*	
970.338		(21.02)	(21.02)	
G05,I, 7, 8			139.93	139.83*

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8986.996			(21.02)	(21.02)							
003,I, 7, 8			152.00	152.00*							
7230.996			(21.02)	(21.02)							
001,I, 7, 8			221.70	221.70*							
10546.996			(21.02)	(21.02)							
F13,C, 1, 3											
20087.996											
F11,C, 1, 3											
25410.992											
F09,C, 1, 3											
12415.496											
F09,C, 2, 4											
21013.504											
F07,C, 2, 4											
21704.988											
F05,N, 5, 7	175.77		175.77*								
9480.000	(18.58)		(18.58)								
F03,N, 5, 7	28.94		28.94*								
1557.644	(18.58)		(18.58)								
F03,N, 5, 8		341.21		341.21*							
18384.148		(18.58)		(18.58)							
F01,N, 7, 9			329.01								
17707.992			(18.58)								
G13,C, 1, 3											
10583.000											
G11,C, 1, 3											
12227.996											
G09,C, 1, 3											
22984.996											
G07,C, 2, 4											
19970.992											
G05,N, 5, 7	381.73		381.73*								
19486.992	(18.58)		(18.58)								
G03,N, 5, 8		1380.17		1380.17*							
73206.928		(18.58)		(18.58)							
G01,N, 7, 9			74.51								
4010.000			(18.58)								
OVERSTORY REMOVAL CUTS											
ACRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
INTERMEDIATE CUTS											
ACRES	80027.87	129412.19	85816.25	39278.32	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	1226.06	2586.27	2064.40	598.96	0.0	0.0	0.0	0.0	0.0	0.0	
HARVEST CUTS											
ACRES	40373.47	2384.50	82680.00	153006.88	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	1047.33	61.31	1817.72	3100.72	0.0	0.0	0.0	0.0	0.0	0.0	
TOTAL CUTS											
ACRES	100401.31	131776.69	178706.25	192284.19	0.0	0.0	0.0	0.0	0.0	0.0	
M CUNITS	2273.39	2659.58	3902.12	3699.70	0.0	0.0	0.0	0.0	0.0	0.0	

( ) = OVERSTORY REMOVAL CUT. * = HARVEST CUT

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 10
TOTAL OBJECTIVE VALUE = 27447.33 (UNITS = M CUNITS)

OBJECTIVE REPORT

ACTIVITY NAME	ACRES CUT	OBJECTIVE VALUE (UNITS =M CUNITS)	OBJECTIVE VALUE/ACRE (UNITS = CUNITS/ACRE)
A13,I, 3, 5	555.00	48.50	54.74
A11,I, 3, 5	1209.00	80.90	80.37
A09,I, 3, 5	2569.00	118.43	46.32
A07,I, 3, 5	882.53	34.71	39.33
A07,I, 4, 5	12258.47	520.62	42.47
A05,I, 5, 7	11900.00	488.03	39.33
A03,D, 5, 7	5775.00	200.18	34.65
A01,D, 7, 8	2215.00	77.19	34.85
P13,G, 2, 3	1160.47	59.66	51.56
P13,I, 3, 4	189.53	9.11	53.76
P11,I, 3, 5	1814.00	91.37	50.37
P09,I, 3, 5	3884.00	174.66	45.32
P07,I, 4, 5	18393.34	672.95	41.05
P07,I, 5, 6	3317.66	146.04	44.02
P05,I, 5, 6	17850.00	674.37	37.78
P03,D, 5, 6	1032.66	33.48	32.74
P03,D, 6, 7	7638.32	282.81	37.02
P01,D, 7, 8	3323.00	109.43	32.93
B13,G, 1, 3	8849.00	501.66	81.09
B11,G, 1, 3	8088.02	542.34	66.99
B11,G, 2, 4	2188.84	88.04	40.53
B09,I, 3, 5	9183.00	384.01	38.84
B07,I, 3, 5	4433.00	161.72	36.46
B05,I, 4, 5	2852.00	86.72	33.94
B03,T, 5, 7	2472.00	75.89	30.62
B01,T, 7, 9	171.00	5.24	30.62
C13,G, 1, 3	9087.00	444.46	48.92
C11,G, 1, 3	4382.00	208.42	47.78
C09,G, 1, 3	1785.00	83.15	46.56
C07,G, 1, 3	5044.00	226.12	44.83
C05,I, 3, 5	851.00	23.57	24.78
C03,I, 5, 7	298.00	7.33	24.78
D13,G, 2, 4	10448.00	332.70	31.84
D11,G, 2, 4	7487.00	217.72	29.08
D09,G, 2, 4	13703.00	380.65	25.59
D07,I, 5, 7	13872.00	380.67	27.44
D05,I, 5, 7	16388.00	380.68	23.43
D03,I, 6, 8	24842.60	511.71	20.85
D02,I, 7, 9	2486.40	56.23	22.43
D01,I, 7, 9	3897.00	68.74	17.85
E13,G, 2, 4	7736.00	484.81	62.92
E11,G, 2, 4	5806.00	342.30	81.08
E09,G, 2, 4	7457.00	424.40	67.45
E07,G, 2, 4	7057.00	370.85	52.55
E05,I, 5, 7	4436.00	166.07	37.42
E03,I, 5, 7	4820.00	151.49	31.43
E01,I, 7, 9	7032.00	221.02	31.43
G13,G, 1, 2	11807.00	906.04	76.06
G11,G, 1, 2	8409.00	628.24	74.71
G09,G, 1, 2	11166.00	786.26	70.39
G07,G, 1, 2	4482.70	266.72	83.82
G07,G, 2, 3	5121.85	262.55	51.26
G07,I, 5, 7	970.34	40.35	41.58
G05,I, 7, 4	8857.00	271.27	40.75
G03,I, 7, 8	7231.00	262.70	36.33
G01,I, 7, 8	10547.00	314.93	29.86
F13,G, 1, 3	20058.00	887.80	44.26
F11,G, 1, 3	25410.89	1180.34	46.45
F09,G, 1, 3	12415.50	573.47	46.19
F08,G, 2, 4	21013.50	978.23	46.80
F07,C, 2, 4	21709.00	1061.79	48.91
F05,N, 5, 7	9460.00	380.75	40.25
F03,N, 5, 7	1557.84	53.45	34.31
F03,N, 6, 8	18364.15	709.04	38.61
F01,N, 7, 9	17707.99	607.56	34.31
G13,G, 1, 3	10585.00	401.59	37.94
G11,G, 1, 3	12228.00	447.30	36.58
G09,G, 1, 3	22965.00	788.41	34.61
G07,C, 2, 4	19970.89	738.92	37.05
G05,N, 5, 7	19468.89	735.73	37.79
G03,N, 6, 8	73205.94	2828.48	38.61
G01,N, 7, 9	4010.00	137.58	34.31

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NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 10
TOTAL OBJECTIVE VALUE = 27447.32 (UNITS = M CUNITS)

LONG RANGE SUSTAINED YIELD AVERAGE = 2811.93 M CUNITS/DECADE

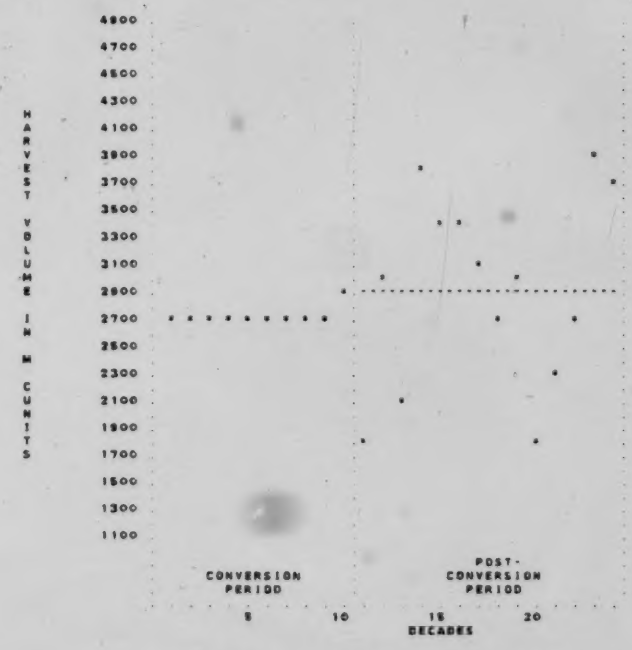
AVERAGE OF POST-CONVERSION PERIODIC HARVESTS=, 2804.46 M CUNITS/DECADE

HARVEST REPORT

	OVERSTORY REMOVAL CUTS			INTERMEDIATE CUTS			HARVEST CUTS			TOTAL CUTS		
PERIOD	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL	ACRES	M CUNITS PERIODIC	M CUNITS TOTAL
1	0.	0.0	0.0	178570.	2727.00	2727.00	0.	0.0	0.0	178570.	2727.00	2727.00
2	0.	0.0	0.0	120670.	2008.37	4736.37	38695.	717.62	717.62	159364.	2727.00	5453.99
3	0.	0.0	0.0	25951.	517.74	5254.11	148158.	2208.28	2828.88	175108.	2727.00	8180.88
4	0.	0.0	0.0	31204.	805.63	6059.74	124887.	2121.36	5048.24	156781.	2727.00	10907.88
5	0.	0.0	0.0	112610.	1815.23	7874.98	42175.	811.77	5860.00	154785.	2727.00	13634.87
6	0.	0.0	0.0	123782.	1955.67	9830.63	37001.	771.33	6731.33	160783.	2727.00	16361.88
7	0.	0.0	0.0	85278.	855.14	10685.77	86059.	1761.85	8493.19	163336.	2727.00	19088.98
8	0.	0.0	0.0	0.	0.0	10685.77	143671.	2727.00	11220.18	143671.	2727.00	21815.98
9	0.	0.0	0.0	129387.	2058.55	12685.32	27518.	667.44	11887.62	176875.	2727.00	24842.98
10	0.	0.0	0.0	134686.	2269.45	14954.77	35695.	535.01	12522.63	170581.	2804.46	27647.41
11	0.	0.0	0.0	3387.	87.40	14882.16	108784.	1727.30	14249.93	112142.	1784.70	29242.10
12	0.	0.0	0.0	20283.	444.70	15436.86	130925.	2686.04	16845.98	151208.	3040.74	32282.84
13	0.	0.0	0.0	106285.	2039.30	17476.16	2387.	61.31	16907.27	110822.	2100.61	34383.44
14	0.	0.0	0.0	135174.	2741.21	20217.38	42175.	1036.28	17943.54	177349.	3777.49	38160.93
15	0.	0.0	0.0	80824.	1248.62	21484.00	109385.	2124.38	20067.88	190179.	3370.97	41831.90
16	0.	0.0	0.0	34971.	868.88	22022.88	144067.	2868.13	22957.03	178058.	3448.12	44880.02
17	0.	0.0	0.0	163800.	2441.10	24464.08	32073.	830.36	23887.37	195872.	3071.45	48051.46
18	0.	0.0	0.0	102056.	1572.32	26036.40	87343.	1161.02	24748.38	189388.	2733.34	50784.81
19	0.	0.0	0.0	39213.	786.22	26822.62	133327.	2201.18	26949.54	172540.	2987.37	53772.18
20	0.	0.0	0.0	3387.	67.40	26890.01	98934.	1736.44	28684.97	100281.	1802.84	55575.02
21	0.	0.0	0.0	60038.	1226.06	28116.07	40373.	1047.33	29732.30	100401.	2273.39	57848.40
22	0.	0.0	0.0	129412.	2583.27	30714.34	2387.	61.31	29793.60	131778.	2659.58	60507.98
23	0.	0.0	0.0	85818.	2084.40	32798.74	82880.	1817.72	31611.32	178708.	3902.12	64410.10
24	0.	0.0	0.0	39278.	588.98	33387.72	163006.	3100.72	34712.04	192284.	3689.70	68100.75

NCFI TIMBER RAM ANALYSIS

OBJECTIVE' TVL03 - HARVEST VOLUME OPTIMIZED THROUGH PERIOD 10



POINTS ARE ACCURATE TO THE NEAREST 100 M CUNITS
------ = PERIOD AVERAGE

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20. Appendix 8: Algorithm forms for Model I and Model II

Model I:

$$\text{Max} \sum_{l=1} \sum_{q=1} D_{lq} \, x_{lq}$$

Subject to area constraints:

$$\sum_{q=1}^{R_l} x_{lq} = A_l$$

where: A_l = no. of hectares in management unit l

U = number of management units

R_l = number of possible regeneration harvest sequences over the planning horizon (PH) for management unit l.

D_{lq} = value per ha. in terms of objective function benefits of management unit l over the planning horizon, if assigned to regeneration harvest sequence q.

x_{lq} = ha. of management unit l assigned to sequence q.

Model II:

$$\text{Max} \sum_{j=1}^{N} \sum_{i=-M}^{j-z} D_{ij} \, x_{ij} + \sum_{i=-M}^{N} E_{iN} \, w_{iN}$$

subject to area constraints:

$$\sum_{i=1}^{N} x_{ij} + w_i \leq A_i \qquad i = -M, \ldots 0$$

and

$$\sum_{k=l+z}^{N} x_{lk} + w_{lN} = \sum_{i=-M}^{j-z} x_{ij} \qquad j = 1, \ldots N$$

where:

x_{ij} (x_{jk}) = hectares regenerated in period i (or j) and regeneration harvested in period j (or k).

w_{iN} (w_{jN}) = hectares regenerated in period i (or j) and left as part of the ending inventory in period N.

Ai = number of hectares present in period one that were regenerated in period i, $i = -M, \ldots, 0$, with each Ai being a a constant at the beginning of the planning horizon (period 1).

M = number of periods before period zero in which the oldest age class present in period one was regenerated.

Z = minimum number of periods between regeneration harvests.

Dij = value in terms of objective function benefits from land regenerated in period i and re-harvested in period j.

21. Appendix 9: Parameters and Results

Table A20: Timber Ram Run Parameters

Run No.	Description
N30.9	-Assume 4% cull in standing and regenerated timber; 10 year regeneration lag; alternate clearcut; 24 decade planning horizon; 10 % conversion link; regeneration stands based on C and D densities.
N30.9C	Base Run - same as N30.9, except for a 6% conversion link.
N33	Mixedwood stand conversion - coniferous component of all current mixedwood stands incremented.
N34I	Genetics - increases applied to regenerated timber for all stands.
N35	Continuous fertilization program - applied to current and regenerated stands.
N35.1	Static single treatment fertilization program - where all current pine stands are fertilized immediately.
N36	Density control - one quarter of all 10 and 30 year old pine stands are treated and incremented.
N36A	- Same as N36, but with a 6.2% conversion link.

N37.5	Regeneration Control – 5 year regeneration lag assumed for all stands.
N37.5A	– Same as N37.5, but with a 4.7% conversion link.
N37.52P	– 5year regeneration assumed for all stands except Pl and PlSw; – 2 year regeneration lag assumed for Pl and PlSw stands.
N37.52A	– Same as N37.25P, except for a 4.7% conversion
N37.2	– Same as N37.52P, but assumes a 14 year leave period before harvest of residuals, for Pl and Pl–Sw stands.
N37.2A	– Same as N37.2, except for a 6.1% conversion link.
N37.7	– 7 year regeneration lag assumed for all stands.
N37.7A	– same as N37.7, except for a 2.7% conversion link.
N38A	Combined Intensive Management Run – assumes mixedwood stand conversion, genetic improvement, regeneration control, and density control.
N38B	– Same as N38A, but with even flow in the conversion period.
N38C	– Same as N38B, but with the PCP average set equal to a LRSYA.

Table A21 - Summary of Results

Run No.	AAC	PCP Ave.	LRSYA	% Imp.	Eff. Index
N30.9	240.284	223.576	226.467		
N30.9C	240.239	226.641	226.467		
N33	269.945	245.504	226.467	12.37	0.226
N34I	240.284	262.308	271.368	0.02	0.000
N35	241.659	224.928	227.786	0.59	0.015
N35.1	241.512	223.918	226.467	0.53	0.014
N36	240.809	223.893	226.467	0.24	0.114
N36A	240.767	226.711	226.467	0.22	0.106
N37.5	254.458	231.133	239.436	5.92	0.021
N37.5A	250.783	239.525	239.436	4.39	0.016
N37.52P	255.165	234.387	242.165	6.21	0.022
N37.52A	253.626	242.240	242.165	5.57	0.020
N37.2	257.904	234.458	242.165	7.35	0.026
N37.2A	256.983	242.408	242.165	6.97	0.025
N37.7	240.284	228.906	233.809	0.02	0.000
N37.7A	240.195	233.881	233.809	-0.02	0.000
N38A	242.258	284.422	293.064	0.84	0.003
N38B	274.228	282.614	290.446	14.14	0.051
N38C	272.700	290.445	291.193	13.51	0.049

22. Appendix 10: Glossary

Constraint	– restriction on the quantity of an input used or output produced during a particular period.
Conversion Period	– the sequence of periods – starting with the first period – for which harvest control constraints have been specified by the user. Since a harvest control constraint must be specified for the first period, the conversion period consists of at least the first period. When no harvest regulation constraints are specified, the conversion period can be extended to the planning horizon.
Harvest Graph	– a graph which displays the total periodic harvest for each decade from the present to the planning horizon.
Harvest Report	– a table which displays the total periodic harvest from the present up to the planning horizon.
Management Alternative	– a scheduled sequence of silvicultural treatments for a specific timber class.
Period	– a decade or the first and second half of the first decade when the "five year option" is selected.

Post Conversion Period	– the sequence of decades from the end of the conversion period to the planning horizon.
Sequential Control Constraint	– one of the three types of control constraints which can be imposed on periodic harvests.
Timber Class	– a collection of stands of sufficiently similar character to be treated as if they were identical.
Volume Class	– yield functions that represent the existing volume and growth, and the regenerated volume at rotation age of a collection of timber classes differing only by age.